Regulation 1138

Emission Standards for Hazardous Air Pollutants for Source Categories

Section 8

Facility-wide Requirements for Halogenated Solvent Cleaning Operations

August 24, 2011

Public Hearing Handouts

Jim Snead
DNREC
Air Quality Management Section

Key Definitions

Hazardous air pollutants (HAPs) are any air pollutant listed in or pursuant to Section 112(b) of the Act. HAPs are also called air toxics. **Methylene chloride**, **perchloroethylene**, and **trichloroethylene** are listed in Section 112(b).

Affected source is, for the purposes of Regulation 1138, the collection of equipment, activities, or both within a single contiguous area and under common control that is included in a Section 112(c) (of the Clean Air Act) source category or subcategory for which a Section 112(d) (of the Clean Air Act) standard or other relevant standard is established pursuant to Section 112 of the Act.

Affected facility is, for the purposes of 8.0 of this regulation, **all solvent cleaning machines** subject to 8.0, **except** for the following.

- Solvent cleaning machines used in the manufacture or maintenance of aerospace products.
- Solvent cleaning machines used in the manufacture of narrow tubing.
- Continuous web cleaning machines, located at a major source that is subject to the facility-wide limits in 8.10.2.2 of this regulation.
- Cold batch cleaning machines, located at an area source that is subject to the facility-wide limits in 8.10.2.2 of Regulation 1138.

Exceedance is any instance in which the calculated emissions exceed an applicable emission limit.

Facility-wide exceedance is any instance in which **monthly calculation** of the facility-wide 12-month rolling total halogenated HAP solvent emissions for an affected facility exceeds the applicable facility-wide 12-month rolling total halogenated HAP solvent emission limit presented in Table 8-7 of Regulation 1138.

Acronyms

Admin Code	The Delaware Administrative Code
CFR	Code of Federal Regulations
DE	Delaware
DNREC	Department of Natural Resources and Environmental Control
EPA	United States Environmental Protection Agency
HAPs	Hazardous Air Pollutants
MACT	Maximum Achievable Control Technology
MeCl	Methyl chloride
NESHAP	National Emission Standard for Hazardous Air Pollutants
Perc	Perchloroethylene
Sub T	40 CFR Part 63 Subpart T
TCE	Trichloroethylene

Regulating Hazardous Air Pollutants

40 CFR Part 63

At the National Level

1970

- **Congress sought to reduce the Publics' Risk from exposure to toxics . . . .**

Congress's mandate to EPA

- **Identify** toxic hazardous air pollutants (HAPs)
- **Establish** a numerical emission limits and **promulgate** standards that would protect human health from any adverse effects of these HAPs

1973 to 1990

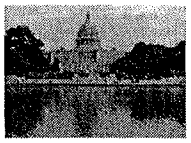
- Seven HAPs identified
- **21** Emission standards promulgated

	'73 – '80	'81 – '85	'86 – '90	'91 – '92
Arsenic			3	
Asbestos		1		
Benzene		1	4	
Beryllium	2			
Mercury	1			
Radionuclides			7	1
Vinyl chloride	1			

NESHAP – National Emissions Standard for Hazardous Air Pollutants

Clean Air Act Amendments of 1990

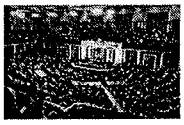
- **Congress** identified 189 Hazardous Air Pollutants or HAPs



- Including . . .
  - Trichloroethylene
  - Methylene chloride
  - Chloroform
  - Perchloroethylene
  - Carbon tetrachloride
  - 1, 1, 1 Trichloroethane

Clean Air Act Amendments of 1990

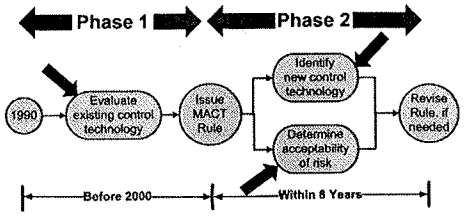
- **Congress** directed the EPA to **identify emission sources** of those 189 HAPs



  - July 16,1992 - EPA published its initial listing of source categories
  - Including in that listing was
    - Halogenated solvent cleaners

Clean Air Act Amendments of 1990

- **Congress** even prescribed EPA's rule-making "path forward"



MACT – Maximum Achievable Control Technology

Federal Halogenated Solvent Cleaning Rule

40 CFR Part 63 Subpart T - PHASE 1

July 16, 1992

Halogenated Solvent Cleaning Listed

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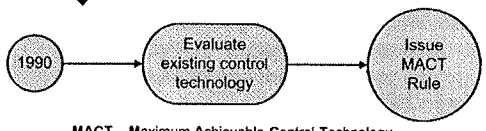


MACT – Maximum Achievable Control Technology

Federal Halogenated Solvent Cleaning Rule

40 CFR Part 63 Subpart T - PHASE 1

Identified existing control technologies in use that reduced the emissions of HAPs

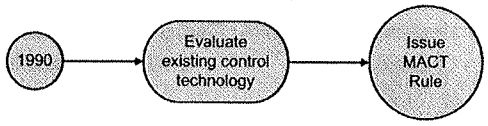
- **Equipment design parameters** (Machine covers, freeboard ratio, etc)
- **Control techniques and devices** (Primary & secondary chillers, carbon adsorbers, superheated vapor, dwell, etc
- **Best management practices** (Vapor-tight containers, eliminate drafts, etc)

Federal Halogenated Solvent Cleaning Rule

40 CFR Part 63 Subpart T - PHASE 1

Nov. 29, 1993 Technology Review Completed

Dec. 2, 1994 MACT Finalized

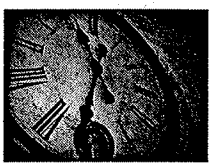


MACT – Maximum Achievable Control Technology

Federal Halogenated Solvent Cleaning Rule

40 CFR Part 63 Subpart T

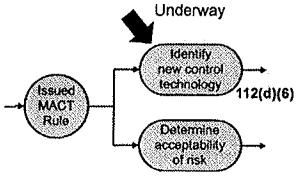
PHASE 1 ⟶ PHASE 2



Federal Halogenated Solvent Cleaning Rule

40 CFR Part 63 Subpart T - PHASE 2

2004-2005 Phase 2 Underway



MACT – Maximum Achievable Control Technology

Federal Halogenated Solvent Cleaning Rule

PHASE 2 Review

112(d)(6) Technology Review requires EPA to

- **Review** the technology-based (MACT) standard
- **Revise** the MACT standard "as necessary" after considering changes in
  - Processes
  - Work practices
  - Control technologies

Federal Halogenated Solvent Cleaning Rule

40 CFR Part 63 Subpart T - PHASE 2

112(d)(6) Technology Review

EPA determined there had been **no notable** developments since 1994 with related to

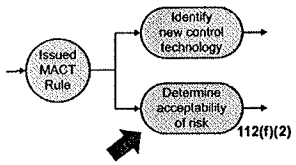
- Solvent cleaning processes
- Solvent cleaning work practices
- Control technologies

Federal Halogenated Solvent Cleaning Rule

40 CFR Part 63 Subpart T - PHASE 2

2004-2005

Phase 2 Underway



Federal Halogenated Solvent Cleaning Rule

PHASE 2 Review

112(f)(2) Risk Review requires EPA to

- **Determine** whether the MACT standard protects public health with an ample margin of safety.
- **Promulgate** residual risk standards for the source category as necessary to provide an ample margin of safety.

Federal Halogenated Solvent Cleaning Rule

40 CFR Part 63 Subpart T - PHASE 2

112(f)(2) Risk Review

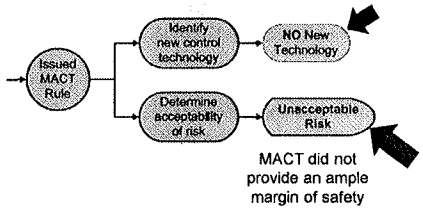
EPA **determined** that following the full implementation of the MACT standard

- ~95% of the people were exposed to a cancer risk of less than 10 in a million
- But 90 persons were exposed to cancer risk greater than 100 in a million
- Some to cancer risk greater than 200 in a million

Federal Halogenated Solvent Cleaning Rule

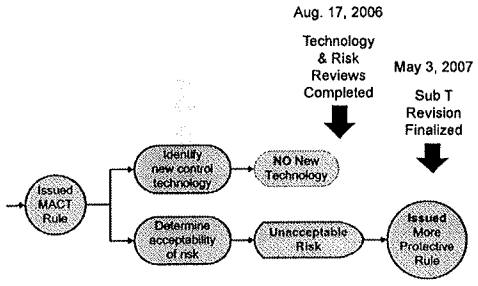
40 CFR Part 63 Subpart T - PHASE 2

Phase 2 Review Results



Federal Halogenated Solvent Cleaning Rule

40 CFR Part 63 Subpart T - PHASE 2



Regulating Hazardous Air Pollutants

In Delaware

Air Regulation 1138

Delaware's Regulation of Halogenated Solvent Cleaning

EPA		DNREC
40 CFR Part 63 Subpart T		Reg. 1138 Section 8.0
Dec. 2, 1994	Technology-based MACT Standard	Nov. 1, 2001
May 3, 2007	Risk-based Standard	Current Action under SAN 2010-24

New emission limits

TCE

MeCl

Facility-wide 12-month rolling total solvent emission limits applicable to affected facilities

Perc

Perc / TCE / MeCl

Proposed changes to Section 8.0

- **None** of the original MACT standard requirements have changed
- **Additional requirements**
  - Facility-wide 12-month rolling total solvent emission limits
  - Monthly monitoring
  - Monthly compliance demonstration
  - Initial notifications
  - Annual reporting
  - Recordkeeping

Facility-wide emission limits

Table 8-7

Facility-wide 12-month rolling total emission limits	
Solvent emitted	General population solvent cleaning machines (kilograms per rolling 12 months)
Perchloroethylene	4,800
Trichloroethylene	14,100
Methylene chloride	60,000

Monitoring Requirements

For each solvent cleaning machine subject to a facility-wide emission limit - - -

- Record clean solvent additions
- Record liquid solvent deletions
- Record solid waste deletions
- Determine the overall solvent content of solid wastes deleted

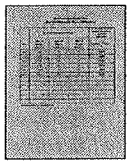
Emissions = Additions less Deletions

Monitoring Requirements

On the first operating day of each month - -

- Determine the **facility-wide 12-month rolling total HAP solvent emissions** (ETfacility) for the most recent 12 months using Equation 8-12

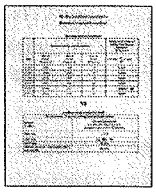
$$ETfacility = \sum_{j=1}^{i} ETunit \quad \text{(Eq. 8-12)}$$



Compliance Demonstration Requirements

On the first operating day of each month - - -

- Compare the **facility-wide 12-month rolling total HAP solvent emissions** (ETfacility) to the applicable facility-wide emission limit in Table 8-7



Compliance Demonstration Requirements

On the first operating day of each month - - -

- Compare the **facility-wide 12-month rolling total HAP solvent emissions** (ETfacility) to the applicable facility-wide emission limit in Table 8-7

Table 8-7

Facility-wide 12-month rolling total emission limits	
Solvent emitted	General population solvent cleaning machines (kilograms per rolling 12 months)
Perchloroethylene	4,800
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Methylene chloride	60,000

Notification Requirements

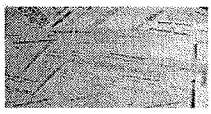
- **Initial notification**
- **Initial statement of compliance**

Reporting Requirements

- **Annual Solvent Emissions Report**
- **Facility-wide Exceedance Report**

Recordkeeping Requirements

- Records of all solvent additions and deletions
- Records of all calculations made to determine the monthly and facility-wide12-month rolling HAP emissions
- Records associated with all submitted notifications and reports



DNREC's Proposed Section 8.0

- Section 8.0 of Reg. 1138 draft was presented at a June 28, 2010 public workshop
- Proposed Section 8.0 appeared in the August 1, 2010 Delaware Register of Regulations

Office of the Registrar of Regulations, Legislative Council, State of Delaware

Errata Found in Proposed Section 8.0

The Department is recommending correction of several errata and other non-substantive changes

- **For consistency with the Registrar's Style manual, to replace "~~must~~ shall"**
- ***Revised proposed Section 8.0 is included in hearing handouts, which shows these corrections***

In closing

The Department

Would like to add

The Department Exhibits

The Department offers

- 34 exhibits and asks that they be incorporated into the hearing record as DNREC Exhibits 1 through 34
- DNREC Exhibit 1 provides a description of each of these exhibits
- DNREC Exhibit 1 has also been included in public hearing handouts for the benefit of those attending tonight's public hearing

The Department's Exhibits Demonstrate

The Department has

- Met all Statutory and Departmental requirements throughout the amendment of Section 8.0
- Maintained open communications with the potential affected source throughout the amendment process
- Provided the public with complete, timely information through the Section 8.0 Regulatory Web Page

For the latest information,
follow the ongoing amendment on
Section 8.0 Regulatory Web Page

http://www.dnrec.delaware.gov/whs/awm/Info/Regs/Pages/Section8.aspx

Exhibits Listing
Proposed Amendment to Section 8.0 of Regulation 1138
(under SAN 2010-24)

DNREC
Exhibit #

1. Listing of the Department's Exhibits submitted at the August 24, 2011 public hearing.
2. Department's Section 8.0 Public Hearing Handouts distributed at the August 24, 2011 public hearing on the proposed amendment of Section 8.0 of Regulation 1138, which includes the Department's power point presentation.
3. EPA's Hazard Summary Fact Sheet for trichloroethylene (TCE), which is based on information in EPA's IRIS database.
4. EPA's Hazard Summary Fact Sheet for perchloroethylene (PERC), which is based on information in EPA's IRIS database.
5. EPA's Hazard Summary Fact Sheet for methylene chloride (MeCl), which is based on information in EPA's IRIS database.
6. EPA's proposed residual risk rulemaking applicable to halogenated solvent cleaning operations that appeared in the August 17, 2006 Federal Register.
7. EPA's final residual risk rulemaking applicable to halogenated solvent cleaning operations that appeared in the May 3, 2007 Federal Register.
8. The Department's Start Action Notice 2010-24 approving the planned amendment of Section 8.0 of Regulation 1138.
9. The listing of the existing Delaware source subject to the requirements of Section 8.0.
10. The listing of Section 8.0 contacts that the Department maintained communications with during the regulatory development process.
11. The June 2, 2011 email indicating the Department's intent to amend Section 8.0. The initial draft of the Section 8 amendment and information on the planned public workshop on June 28 were included. This email also provided the link to the Section 8.0 Regulatory Web page.
12. The June 14, 2011 email that reminded the "Section 8 Contact List" of the upcoming public workshop. This email also provided a link to the public workshop handout, materials, and planned presentation.
13. The August 2, 2011 email that notified the "Section 8 Contact List" of the publication of the proposed amendment to Section 8.0 in August 1, 2011 Delaware Register and of the planned August 24 Public Hearing. The email also include notice of non-substantive errata and style manual gaffes that were found in the Register language and a revised proposed amendment that included these changes.
14. The public workshop notice as it appeared in the May 29, 2011 Delaware State News.
15. The public workshop notice as they appeared in the May 29, 2011 Sunday News Journal.
16. The "Environmental Protection E-News Update" dated June 21, 2011 notifying the recipient of the June 28, 2011 public workshop.
17. The Statewide Calendar of Meeting notice announcing the June 28 public workshop in Dover for the planned amendment of Section 8.0 of Regulation 1138.
18. The power point presentation provided at the June 28 public workshop on the planned amendment of Section 8.0 of Regulation 1138.
19. The Department's Section 8.0 Public Workshop Handout distributed at the June 28, 2011 public workshops on the planned amendment of Section 8.0 of Regulation 1138.
20. The Regulatory Flexibility Act Analysis associated with the proposed amendment of Section 8.0 of Regulation 1138.

DNREC #1

Exhibits Listing
Proposed Amendment to Section 8.0 of Regulation 1138
(under SAN 2010-24)

DNREC
Exhibit #

21. A comparison of the proposed Delaware Section 8 facility-wide requirements to the Federal facility-wide requirements under 40 CFR Part 63 Subpart T applicable to halogenated solvent cleaning operations.
22. The Department's proposed amendment to Section 8 and its related public notice as they appeared in the August 1, 2011 Delaware Register of Regulations.
23. The public hearings notice as it appeared in the July 17, 2011 Delaware State News.
24. The public hearings notice as it appeared in the July 17, 2011 The News Journal.
25. The "Delaware Department of Environmental Protection E-News" dated July 19, 2011 notifying the recipient of the August 24, 2011 public hearing.
26. The Statewide Calendar of Meeting notice announcing the August 24, 2011 public hearing on the proposed amendment of Section 8 of Regulations 1138, as it appeared on July 29, 2011.
27. Exhibit providing corrections for errata and inconsistencies found in proposed amendment to Section 8 of Regulation 1138 that was published on August 1, 2011.
28. The Department's revised proposed amendment to Section 8 of Regulation 1138 that incorporates the corrections identified in Exhibit 27.
29. Compliance Assistance Tool – An "Initial Notification" form with instructions.
30. Compliance Assistance Tool – An "Initial Statement of Compliance" form with instructions.
31. Compliance Assistance Tool – An "Exceedance Report" form with instructions.
32. Compliance Assistance Tool – An "Annual Solvent Emissions Report" form with instructions.
33. The Division of Air Quality Section 8 regulatory web page, as it appeared on August 8, 2011, that has been available since October 2010 permitting the public to follow the development of this amendment to Section 8.
34. The Department's August 24, 2011 prepared public hearing "oral" presentation.

Corrected Errata for Proposed Amendment to Section 8 of Regulation 1138 as it Appeared in the August 1, 2011 Delaware Register of Regulations

8.10.2.1 Each owner or operator of an affected facility **[~~must~~ shall]** maintain a log of solvent additions and deletions for each solvent cleaning machine.

8.10.2.2 Each owner or operator of an affected facility **[~~must~~ shall]** ensure that the total emissions of perchloroethylene, trichloroethylene and methylene chloride used at the affected facility are equal to or less than the applicable facility-wide 12-month rolling total halogenated HAP solvent emission limit presented in Table 8-7 of this regulation as determined using the procedures in 8.10.3.1 of this regulation.

8.10.3.1.1 Each owner or operator of an affected facility shall on the first operating day of **[~~month~~]** each **[month]** ensure that each solvent cleaning machine system contains only clean liquid solvent. This includes, but is not limited to, fresh unused solvent, recycled solvent, and used solvent that has been cleaned of soiled materials. A fill line **[~~must~~ shall]** be indicated during the first month the measurements are made. The solvent level within the machine **[~~must~~ shall]** be returned to the same fill-line each month, immediately prior to calculating monthly emissions as specified in 8.10.3.1.2 and 8.10.3.1.3 of this regulation. The solvent cleaning machine does not have to be emptied and filled with fresh unused solvent prior to the calculations.

8.10.5.2 Each owner or operator of an affected facility shall submit an initial statement of compliance to the Department. If the affected facility initially started up on or before May 3, 2010, the owner or operator of the affected facility shall submit this statement not later than November 11, 2011. If the affected facility initially started up after May 3, 2010, the owner or operator of the affected facility shall submit this statement not later than November 11, 2011 or 13 months after startup, whichever is later. The statement shall include the information specified in 8.10.5.2.1 through **[~~8.10.5.2.5~~ 8.10.5.2.6]** of this regulation.

From Equation 8-9

TCE = Facility-wide 12-month rolling total trichloroethylene **[~~emission~~ emissions]** from all solvent cleaning machines at the affected facility in kilograms.

8.0 Emission Standards for Halogenated Solvent Cleaning

8.1 Applicability and designation of source.

8.1.1 The provisions of 8.0 of this regulation apply to each individual batch vapor, in-line vapor, in-line cold, and batch cold solvent cleaning machine that uses any solvent containing methylene chloride (CAS No. 75-09-2), perchloroethylene (CAS No. 127-18-4), trichloroethylene (CAS No. 79-01-6), 1,1,1-trichloroethane (CAS No. 71-55-6), carbon tetrachloride (CAS No. 56-23-5) or chloroform (CAS No. 67-66-3), or any combination of these halogenated HAP solvents, in a total concentration greater than 5% by weight, as a cleaning or drying agent. The concentration of these solvents may be determined using Method 18 in Appendix A of 40 CFR Part 60, material safety data sheets, or engineering calculations. Wipe cleaning activities, such as using a rag containing halogenated HAP solvent or a spray cleaner containing halogenated HAP solvent are not covered under the provisions of 8.0 ~~of this regulation~~.

8.1.2 Owners or operators of affected sources subject to the provisions of 8.0 of this regulation must also comply with the requirements of 3.0 of this regulation, according to the applicability of 3.0 to such sources, as identified in Table ~~8-7~~ 8-8 of this regulation.

8.1.3 Each solvent cleaning machine subject to 8.0 of this regulation that commences construction or reconstruction after November 29, 1993 shall achieve compliance with the provisions of 8.0 ~~of this regulation,~~ except for 8.10 of this regulation, immediately upon start-up or by November 11, 2001, whichever is later.

8.1.4 Each solvent cleaning machine subject to 8.0 of this regulation that commenced construction or reconstruction on or before November 29, 1993 shall achieve compliance with the provisions of 8.0, except for 8.10 of this regulation, no later than November 11, 2001.

8.1.5 [Reserved]

8.1.6 [Reserved]

8.1.7 [Reserved]

8.1.8 The owner or operator of an area source subject to 8.0 of this regulation is exempt from the obligation to obtain a Title V operating permit under 7 DE Admin. Code 1130 of State of Delaware "Regulations Governing the Control of Air Pollution", if the owner or operator is not required to obtain a Title V operating permit under 3.1 of 7 DE Admin. Code 1130 for a reason other than the owner or operator's status as an area source under 8.0. Notwithstanding the previous sentence, the owner or operator shall continue to comply with the provisions of 8.0 applicable to area sources.

8.1.9 The compliance date for the requirements in 8.10 of this regulation depends on the date that construction or reconstruction of the affected facility commences.

8.1.9.1 Each affected facility that commenced construction or reconstruction on or before August 17, 2006, shall achieve compliance with the provisions of 8.10 of this regulation no later than November 11, 2011.

8.1.9.2 Each affected facility that commences construction or reconstruction after August 17, 2006, shall achieve compliance with the provisions of 8.10 of this regulation on November 11, 2011 or immediately upon startup, whichever is later.

8.2 Definitions.

Unless defined below, all terms in 8.0 of this regulation have the meanings given them in the Act or in 3.2 of this regulation.

"Administrator" means the Administrator of the United States Environmental Protection Agency.

"Affected facility" means, for the purposes of 8.0 of this regulation, all solvent cleaning machines subject to 8.0, except for the following.

- Solvent cleaning machines used in the manufacture or maintenance of aerospace products.
- Solvent cleaning machines used in the manufacture of narrow tubing.
- Continuous web cleaning machines, located at a major source that is subject to the facility-wide limits in 8.10.2.2 of this regulation.
- Cold batch cleaning machines, located at an area source that is subject to the facility-wide limits in 8.10.2.2 of this regulation.

"Air blanket" means the layer of air inside the solvent cleaning machine freeboard located above the solvent/air interface. The centerline of the air blanket is equidistant between the sides of the machine.

"Air knife system" means a device that directs forced air at high pressure, high volume, or a combination of high pressure and high volume, through a small opening directly at the surface of a continuous web part. The purpose of this system is to remove the solvent film from the surfaces of the continuous web part.

"Automated parts handling system" means a mechanical device that carries all parts and parts baskets at a controlled speed from the initial loading of soiled or wet parts through the removal of the cleaned or dried parts. Automated parts handling systems include, but are not limited to, hoists and conveyors.

"Batch cleaning machine" means a solvent cleaning machine in which individual parts or a set of parts move through the entire cleaning cycle before new parts are introduced into the solvent cleaning machine. An open-top vapor cleaning machine is a type of batch cleaning machine. A solvent cleaning machine, such as a ferris wheel or a cross-rod degreaser, that clean multiple batch loads simultaneously and are manually loaded are batch cleaning machines.

"Carbon adsorber" means a bed of activated carbon into which an air-solvent gas-vapor stream is routed and which adsorbs the solvent on the carbon.

"Clean liquid solvent" means fresh unused solvent, recycled solvent, or used solvent that has been cleaned of soils (e.g., skimmed of oils or sludge and strained of metal chips).

"Cleaning capacity" means, for a cleaning machine without a solvent/air interface, the maximum volume of parts that can be cleaned at one time. In most cases, the cleaning capacity is equal to the volume (length times width times height) of the cleaning chamber.

"Cold cleaning machine" means any device or piece of equipment that contains or uses liquid solvent, into which parts are placed to remove soils from the surfaces of the parts or to dry the parts. Cleaning machines that contain and use heated, nonboiling solvent to clean the parts are classified as cold cleaning machines.

"Combined squeegee and air-knife system" means a system consisting of a combination of a squeegee system and an air-knife system within a single enclosure.

"Consumption" means the amount of halogenated ~~hazardous air pollutant~~ HAP solvent added to the solvent cleaning machine.

"Continuous web cleaning machine" means a solvent cleaning machine in which parts such as film, coils, wire, and metal strips are cleaned at speeds typically in excess of 11 feet per minute. Parts are generally uncoiled, cleaned such that the same part is simultaneously entering and exiting the solvent application area of the solvent cleaning machine, and then recoiled or cut. For the purposes of ~~Section~~ 8.0 of this regulation, all continuous web cleaning machines are considered to be a subset of in-line solvent cleaning machines.

"Cover" means a lid, top, or portal cover that shields the solvent cleaning machine openings from air disturbances when in place and is designed to be easily opened and closed without disturbing the vapor zone. Air disturbances include, but are not limited to, lip exhausts, ventilation fans, and general room drafts. Types of covers include, but are not limited to, sliding, biparting, and roll top covers.

"Cross-rod solvent cleaning machine" means a batch solvent cleaning machine in which parts baskets are suspended from "cross-rods" as they are moved through the machine. In a cross-rod cleaning machine, parts are loaded semi-continuously, and enter and exit the machine from a single portal.

"Downtime mode" means the time period when a solvent cleaning machine is not cleaning parts and the sump heating coils, if present, are turned off.

"Dwell" means the technique of holding parts within the freeboard area but above the vapor zone of the solvent cleaning machine. Dwell occurs after cleaning to allow solvent to drain from the parts or parts baskets back into the solvent cleaning machine.

"Dwell time" means the required minimum length of time that a part must dwell, as determined in 8.6.4 of this regulation.

"Emissions" means halogenated ~~hazardous air pollutant~~ HAP solvent consumed (i.e., halogenated ~~hazardous air pollutant~~ HAP solvent added to the machine) minus the liquid halogenated ~~hazardous air pollutant~~ HAP solvent removed from the machine and the halogenated ~~hazardous air pollutant~~ HAP solvent removed from the machine in the solid waste.

"Existing" means any solvent cleaning machine the construction or reconstruction of which was commenced on or before November 29, 1993. An existing solvent cleaning machine moved within a contiguous facility or to another facility under the same ownership remains an existing machine.

"Freeboard area" means; for a batch cleaning machine, the area within the solvent cleaning machine that extends from the solvent/air interface to the top of the solvent cleaning machine; for an in-line cleaning machine, it is the area within the solvent cleaning machine that extends from the solvent/air interface to the bottom of the entrance or exit opening, whichever is lower.

"Freeboard height" means; for a batch cleaning machine, the distance from the solvent/air interface, as measured during the idling mode, to the top of the cleaning machine; for an in-line cleaning machine, it is the distance from the solvent/air interface to the bottom of the entrance or exit opening, whichever is lower, as measured during the idling mode.

"Freeboard ratio" means the ratio of the solvent cleaning machine freeboard height to the smaller interior dimension (length, width, or diameter) of the solvent cleaning machine.

"Freeboard refrigeration device" (also called a chiller) means a set of secondary coils mounted in the freeboard area that carries a refrigerant or other chilled substance to provide a chilled air blanket above the solvent vapor. A primary condenser capable of meeting the requirements of 8.4.5.2.1 of this regulation is defined as both a freeboard refrigeration device and a primary condenser for the purposes of these standards.

"Halogenated hazardous air pollutant solvent" or **"halogenated HAP solvent"** means methylene chloride (CAS No. 75-09-2), perchloroethylene (CAS No. 127-18-4), trichloroethylene (CAS No. 79-01-6), 1,1,1-trichloroethane (CAS No. 71-55-6), carbon tetrachloride (CAS No. 56-23-5), and chloroform (CAS No. 67-66-3).

"Hoist" means a mechanical device that carries the parts basket and the parts to be cleaned from the loading area into the solvent cleaning machine and to the unloading area at a controlled speed. A hoist may be operated by controls or may be programmed to cycle parts through the cleaning cycle automatically.

"Idling mode" means the time period when a solvent cleaning machine is not actively cleaning parts and the sump heating coils, if present, are turned on.

"Idling-mode cover" means any cover or solvent cleaning machine design that allows the cover to shield the cleaning machine openings during the idling mode. A cover that meets this definition can also be used as a working-mode cover if that definition is also met.

"Immersion cold cleaning machine" means a cold cleaning machine in which the parts are immersed in the solvent when being cleaned. A remote reservoir cold cleaning machine that is also an immersion cold cleaning machine is considered an immersion cold cleaning machine for purposes of 8.0 of this regulation.

"In-line cleaning machine" or **"continuous cleaning machine"** means a solvent cleaning machine that uses an automated parts handling system, typically a conveyor, to automatically provide a continuous supply of parts to be cleaned. These solvent cleaning machines are fully enclosed except for the conveyor inlet and exit portals. In-line cleaning machines can be either cold or vapor cleaning machines.

"Leak-proof coupling" means a threaded or other type of coupling that prevents solvents from leaking while filling or draining solvent to and from the solvent cleaning machine.

"Lip exhaust" means a device installed at the top of the opening of a solvent cleaning machine that draws in air and solvent vapor from the freeboard area and ducts the air and vapor away from the solvent cleaning area.

"Manufacture of narrow tubing" means primarily engaged in the production of small diameter (mechanical and hypodermic size) cold drawn metallic, seamless tubes from materials such as stainless steel, nickel alloys, titanium and its alloys, and alloys of zirconium with a portion of the outside diameters 0.25 inches or less.

"Manufacture or maintenance of aerospace products" means engaged in the manufacture, rework, or repair of aircraft such as airplanes, helicopters, missiles, rockets, and space vehicles.

"Monthly reporting period" means any calendar month in which the owner or operator of a solvent cleaning machine is required to calculate and report the solvent emissions from each solvent cleaning machine.

"New" means any solvent cleaning machine the construction or reconstruction of which is commenced after November 29, 1993.

"Open-top vapor cleaning machine" means a batch solvent cleaning machine that has its upper surface open to the air and boils solvent to create solvent vapor used to clean or dry parts.

"Part" means any object that is cleaned or dried in a solvent cleaning machine. Parts include, but are not limited to, discrete parts, assemblies, sets of parts, and parts cleaned or dried in a continuous web cleaning machine (i.e., continuous sheets of metal or film).

"Primary condenser" means a series of circumferential cooling coils on a vapor cleaning machine through which a chilled substance is circulated or recirculated to provide continuous condensation of rising solvent vapors and, thereby, create a concentrated solvent vapor zone.

"Reduced room draft" means decreasing the flow or movement of air across the top of the freeboard area of the solvent cleaning machine to meet the specifications of 8.4.5.2.2 of this regulation. Methods of achieving a reduced room draft include, but are not limited to, redirecting fans or air vents to not blow across the cleaning machine, moving the cleaning

machine to a corner where there is less room draft, and constructing a partial or complete enclosure around the cleaning machine.

"Remote reservoir cold cleaning machine" means any device in which liquid solvent is pumped to a sink-like work area that drains solvent back into an enclosed container while parts are being cleaned, allowing no solvent to pool in the work area.

"Remote reservoir continuous web cleaning machine" means a continuous web cleaning machine in which there is no exposed solvent sump. In these solvent cleaning machines, the solvent is pumped from an enclosed chamber and is typically applied to the continuous web part through a nozzle or series of nozzles. The solvent then drains from the part and is collected and recycled through the machine, allowing no solvent to pool in the work or cleaning area.

"Soils" mean contaminants that are removed from the parts being cleaned. Soils include, but are not limited to, greases, oils, waxes, metal chips, carbon deposits, fluxes, and tars.

"Solvent/air interface" means, for a vapor cleaning machine, the location of contact between the concentrated solvent vapor layer and the air. This location of contact is defined as the mid-line height of the primary condenser coils. For a cold cleaning machine, it is the location of contact between the liquid solvent and the air.

"Solvent/air interface area" means; for a vapor cleaning machine, the surface area of the solvent vapor zone that is exposed to the air; for an in-line cleaning machine, it is the total surface area of all the sumps; for a cold cleaning machine, it is the surface area of the liquid solvent that is exposed to the air.

"Solvent cleaning machine" means any device or piece of equipment that uses halogenated HAP solvent liquid or vapor to remove soils from the surfaces of materials. Types of solvent cleaning machines include, but are not limited to, batch vapor, in-line vapor, in-line cold, and batch cold solvent cleaning machines. Buckets, pails, and beakers with capacities of one liter (34 ounces) or less are not considered solvent cleaning machines.

"Solvent vapor zone" means; for a vapor cleaning machine, the area that extends from the liquid solvent surface to the level that solvent vapor is condensed. This condensation level is defined as the midline height of the primary condenser coils.

"Squeegee system" means a system that uses a series of pliable surfaces to remove the solvent film from the surfaces of the continuous web part. These pliable surfaces, called squeegees, are typically made of rubber or plastic media, and need to be periodically replaced to ensure continued proper function.

"Sump" means the part of a solvent cleaning machine where the liquid solvent is located.

"Sump heater coils" means the heating system on a cleaning machine that uses steam, electricity, or hot water to heat or boil the liquid solvent.

"Superheated part technology" means a system that is part of the continuous web process that heats the continuous web part either directly or indirectly to a temperature above the boiling point of the cleaning solvent. This could include a process step, such as a tooling die that heats the part as it is processed, as long as the part remains superheated through the cleaning machine.

"Superheated vapor system" means a system that heats the solvent vapor, either passively or actively, to a temperature above the solvent's boiling point. Parts are held in the superheated vapor before exiting the machine to evaporate the liquid solvent on them. Hot vapor recycle is an example of a superheated vapor system.

"Vapor cleaning machine" means a batch or in-line solvent cleaning machine that boils liquid solvent generating solvent vapor that is used as a part of the cleaning or drying cycle.

"Water layer" means a layer of water that floats above the denser solvent and provides control of solvent emissions. In many cases, the solvent used in batch cold cleaning machines is sold containing the appropriate amount of water to create a water cover.

"Working mode" means the time period when the solvent cleaning machine is actively cleaning or drying parts.

"Working-mode cover" means any cover or solvent cleaning machine design that allows the cover to shield the cleaning machine openings from outside air disturbances while parts are being cleaned in the cleaning machine. A cover that is used during the working mode is opened only during parts entry and removal. A cover that meets this definition can also be used as an idling-mode cover if that definition is also met.

8.3 Batch cold cleaning machine standards.

8.3.1 Each owner or operator of an immersion batch cold solvent cleaning machine shall comply with the requirements specified in 8.3.1.1 or 8.3.1.2 of this regulation.

8.3.1.1 Employ a tightly fitting cover that shall be closed at all times except during parts entry and removal, and a water layer at a minimum thickness of 2.5 centimeters (1.0 inch) on the surface of the solvent within the cleaning machine or

8.3.1.2 Employ a tightly fitting cover that shall be closed at all times except during parts entry and removal and a freeboard ratio of 0.75 or greater.

8.3.2 Each owner or operator of a remote-reservoir batch cold solvent cleaning machine shall employ a tightly fitting cover over the sink-like work area that shall be closed at all times except during the cleaning of parts.

8.3.3 Each owner or operator of a batch cold solvent cleaning machine complying with 8.3.1 or 8.3.2 of this regulation shall comply with the work and operational practice requirements specified in 8.3.3.1 through 8.3.3.11 of this regulation as applicable.

8.3.3.1 All waste solvents shall be collected and stored in closed containers. The closed container may contain a device that allows pressure relief, but does not allow liquid solvent to drain from the container.

8.3.3.2 If a flexible hose or flushing device is used, flushing shall be performed only within the freeboard area of the solvent cleaning machine. The solvent spray shall be a solid fluid stream, not an atomized or shower spray, at a pressure that does not exceed 10 pounds per square inch gauge.

8.3.3.3 The owner or operator shall drain solvent cleaned parts for 15 seconds or until dripping has stopped, whichever is longer. Parts having cavities or blind holes shall be tipped or rotated while draining. During the draining, tipping or rotating, the parts shall be positioned so the solvent drains directly into the solvent cleaning machine.

8.3.3.4 The owner or operator shall ensure that the solvent level does not exceed the fill line.

8.3.3.5 Spills during solvent transfer or use of the solvent cleaning machine shall be wiped up immediately. The wipe rags or other sorbent material shall be stored in closed containers meeting the requirements of 8.3.3.1 of this regulation.

8.3.3.6 When a pump-agitated solvent bath is used, the owner or operator shall ensure that the agitator is operated to produce a rolling motion of the solvent with no observable splashing against tank walls or parts being cleaned. Air-agitated solvent baths shall not be used.

8.3.3.7 The owner or operator shall ensure that, when the cover is open, the cold cleaning machine is not exposed to drafts greater than 40 meters per minute (132 feet per minute), as measured between one and two meters (3.3 and 6.6 feet) upwind and at the same elevation as the tank lip. In addition, work area fans shall be located and positioned so that they do not blow across the opening of the solvent cleaning machine.

8.3.3.8 Except as provided in 8.3.3.9 of this regulation, sponges, fabric, wood, and paper products shall not be cleaned.

8.3.3.9 The prohibition in 8.3.3.8 of this regulation does not apply to the cleaning of porous materials that are part of polychlorinated biphenyl (PCB) laden transformers if those transformers are handled throughout the cleaning process and disposed of in compliance with an approved PCB disposal permit issued in accordance with the Toxic Substances Control Act.

8.3.3.10 Each operator of a solvent cleaning machine shall complete and pass the applicable sections of the test of solvent cleaning procedures in Appendix A of 8.0 of this regulation if requested during an inspection by the Department.

8.3.3.11 The owner or operator shall provide a permanent, legible, conspicuous label summarizing the operating requirements in 8.3.3 of this regulation.

8.3.4 Each owner or operator of a batch cold cleaning machine shall submit an initial notification report as described in 8.9.1 and 8.9.2 of this regulation and a compliance report as described in 8.9.3 of this regulation.

8.3.5 Each owner or operator subject to the requirements of 8.3.3.1 through 8.3.3.11 of this regulation may request to use measures other than those described in 8.3.3.1 through 8.3.3.11. The owner or operator must demonstrate to the Department that the alternative measures will result in equivalent or better emissions control compared to the measures described in 8.3.3.1 through 8.3.3.11 ~~of this regulation~~. For example, storing solvent and solvent-laden materials in an enclosed area that is ventilated to a solvent recovery or destruction device may be considered an acceptable alternative.

8.4 Batch vapor and in-line cleaning machine standards.

8.4.1 Except as provided in 8.5 of this regulation for all cleaning machines, each owner or operator of a solvent cleaning machine subject to the provisions of 8.0 of this regulation shall ensure that each existing or new batch vapor or in-line solvent cleaning machine subject to the provisions of 8.0 conforms to the design requirements specified in 8.4.1.1 through 8.4.1.7 of this regulation. The owner or operator of a continuous web cleaning machine shall comply with the requirements of 8.4.7 or 8.4.8 of this regulation, as appropriate, in lieu of complying with 8.4.1 of this regulation.

8.4.1.1 Each cleaning machine shall be designed or operated to meet the control equipment or technique requirements in 8.4.1.1.1 or 8.4.1.1.2 of this regulation.

8.4.1.1.1 An idling and downtime mode cover, as described in 8.4.4.1.1 of this regulation, that may be readily opened or closed, that completely covers the cleaning machine openings when in place, and is free of cracks, holes, and other defects.

8.4.1.1.2 A reduced room draft as described in 8.4.5.2.2 of this regulation.

8.4.1.2 Each cleaning machine shall have a freeboard ratio of 0.75 or greater.

8.4.1.3 Each cleaning machine shall have an automated parts handling system capable of moving parts or parts baskets at a speed of 3.4 meters per minute (11 feet per minute) or less from the initial loading of parts through removal of cleaned parts.

8.4.1.4 Each vapor cleaning machine shall be equipped with a device that shuts off the sump heat if the sump liquid solvent level drops to the sump heater coils. This requirement does not apply to a vapor cleaning machine that uses steam to heat the solvent.

8.4.1.5 Each vapor cleaning machine shall be equipped with a vapor level control device that shuts off sump heat if the vapor level in the vapor cleaning machine rises above the height of the primary condenser.

8.4.1.6 Each vapor cleaning machine shall have a primary condenser.

8.4.1.7 Each cleaning machine that uses a lip exhaust shall be designed and operated to route all collected solvent vapors through a properly operated and maintained carbon adsorber that meets the requirements of 8.4.5.2.7 of this regulation.

8.4.2 Except as provided in 8.5 of this regulation, each owner or operator of an existing or new batch vapor cleaning machine shall comply with either 8.4.2.1 or 8.4.2.2 of this regulation.

8.4.2.1 Each owner or operator of a batch vapor cleaning machine with a solvent/air interface area of 1.21 square meters (13 square feet) or less shall comply with the requirements specified in either 8.4.2.1.1 or 8.4.2.1.2 of this regulation.

8.4.2.1.1 Employ one of the control combinations listed in Table 8-1 of this regulation. Alternatively, equivalent methods of control can be submitted to and approved by the Administrator, using the procedure in ~~8.10~~ 8.11 of this regulation.

Table 8-1 - Control Combinations for Batch Vapor Solvent Cleaning Machines With a Solvent/Air Interface Area of 1.21 Square Meters (13 Square Feet) or Less

Option	Control combinations
1	Working-mode cover, freeboard ratio of 1.0, superheated vapor.
2	Freeboard refrigeration device, superheated vapor.
3	Working-mode cover, freeboard refrigeration device.
4	Reduced room draft, freeboard ratio of 1.0, superheated vapor.
5	Freeboard refrigeration device, reduced room draft.
6	Freeboard refrigeration device, freeboard ratio of 1.0.
7	Freeboard refrigeration device, dwell.
8	Reduced room draft, dwell, freeboard ratio of 1.0.
9	Freeboard refrigeration device, carbon adsorber.
10	Freeboard ratio of 1.0, superheated vapor, carbon adsorber.

Note: Unlike most of the control techniques available for complying with 8.0 of this regulation, carbon adsorbers are not considered to be a pollution prevention measure. Use of such units may impose additional cost and burden for a number of reasons. First, carbon adsorption units are generally more expensive than other controls listed in the options. Second, these units may present cross-media impacts such as effluent discharges if not properly operated and maintained, and spent carbon beds have to be disposed of as hazardous waste. When making decisions about what controls to install on halogenated HAP solvent cleaning machines to meet the requirements of 8.0, all of these factors should be weighed and pollution prevention measures are encouraged wherever possible.

8.4.2.1.2 Demonstrate that their solvent cleaning machine can achieve and maintain an idling emission limit of 0.22 kilograms per hour per square meter (0.045 pounds per hour per square foot) of solvent/air interface area as determined using the procedures in 8.6.1 of this regulation and Method 307 in Appendix A of 40 CFR Part 63.

8.4.2.2 Each owner or operator of a batch vapor cleaning machine with a solvent/air interface area greater than 1.21 square meters (13 square feet) shall comply with the requirements specified in either 8.4.2.2.1 or 8.4.2.2.2 of this regulation.

8.4.2.2.1 Employ one of the control combinations listed in Table 8-2 of this regulation. Alternatively, equivalent methods of control can be submitted to and approved by the Administrator, using the procedure in ~~8.10~~ 8.11 of this regulation.

Table 8-2 - Control Combinations for Batch Vapor Solvent Cleaning Machines With a Solvent/Air Interface Area Greater than 1.21 Square Meters (13 Square Feet)

Option	Control combinations
1	Freeboard refrigeration device, freeboard ratio of 1.0, superheated vapor.
2	Dwell, freeboard refrigeration device, reduced room draft.
3	Working-mode cover, freeboard refrigeration device, superheated vapor.
4	Freeboard ratio of 1.0, reduced room draft, superheated vapor.
5	Freeboard refrigeration device, reduced room draft, superheated vapor.
6	Freeboard refrigeration device, reduced room draft, freeboard ratio of 1.0.
7	Freeboard refrigeration device, superheated vapor, carbon adsorber.

Note: Unlike most of the control techniques available for complying with ~~7.0~~ 8.0 of this regulation, carbon adsorbers are not considered to be a pollution prevention measure. Use of such units may impose additional cost and burden for a number of reasons. First, carbon adsorption units are generally more expensive than other controls listed in the options. Second, these units may present cross-media impacts such as effluent discharges if not properly operated and maintained, and spent carbon beds have to be disposed of as hazardous waste. When making decisions about what controls to install on halogenated HAP solvent cleaning machines to meet the requirements of 8.0, all of these factors should be weighed and pollution prevention measures are encouraged wherever possible.

8.4.2.2.2 Demonstrate that their solvent cleaning machine can achieve and maintain an idling emission limit of 0.22 kilograms per hour per square meter (0.045 pounds per hour per square foot) of solvent/air interface area as determined using the procedures in 8.6.1 of this regulation and Method 307 in Appendix A of 40 CFR Part 63.

8.4.3 Except as provided in 8.5 of this regulation for all cleaning machines, each owner or operator of an in-line cleaning machine shall comply with 8.4.3.1 or 8.4.3.2 of this regulation as appropriate. The owner or operator of a continuous web cleaning machine shall comply with the requirements of 8.4.7 or 8.4.8 of this regulation, as appropriate, in lieu of complying with 8.4.3 of this regulation.

8.4.3.1 Each owner or operator of an existing in-line cleaning machine shall comply with the requirements specified in either 8.4.3.1.1 or 8.4.3.1.2 of this regulation.

8.4.3.1.1 Employ one of the control combinations listed in Table 8-3 of this regulation. Alternatively, equivalent methods of control can be submitted to and approved by the Administrator, using the procedure in ~~8.10~~ 8.11 of this regulation.

Table 8-3 - Control Combinations for Existing In-Line Solvent Cleaning Machines	
Option	Control combinations
1	Superheated vapor, freeboard ratio of 1.0.
2	Freeboard refrigeration device, freeboard ratio of 1.0.
3	Dwell, freeboard refrigeration device.
4	Dwell, carbon adsorber.

Note: Unlike most of the control techniques available for complying with 8.0 of this regulation, carbon adsorbers are not considered to be a pollution prevention measure. Use of such units may impose additional cost and burden for a number of reasons. First, carbon adsorption units are generally more expensive than other controls listed in the options. Second, these units may present cross-media impacts such as effluent discharges if not properly operated and maintained, and spent carbon beds have to be disposed of as hazardous waste. When making decisions about what controls to install on halogenated HAP solvent cleaning machines to meet the requirements of 8.0, all of these factors should be weighed and pollution prevention measures are encouraged wherever possible.

8.4.3.1.2 Demonstrate that their solvent cleaning machine can achieve and maintain an idling emission limit of 0.10 kilograms per hour per square meter (0.021 pounds per hour per square foot) of solvent/air interface area as determined using the procedures in 8.6.1 of this regulation and Method 307 in Appendix A of 40 CFR Part 63.

8.4.3.2 Each owner or operator of a new in-line cleaning machine shall comply with the requirements specified in either 8.4.3.2.1 or 8.4.3.2.2 of this regulation.

8.4.3.2.1 Employ one of the control combinations listed in Table 8-4 of this regulation. Alternatively, equivalent methods of control can be submitted to and approved by the Administrator, using the procedure in ~~8.10~~ 8.11 of this regulation.

Table 8-4 - Control Combinations for New In-Line Solvent Cleaning Machines	
Option	Control combinations
1	Superheated vapor, freeboard refrigeration device.

2	Freeboard refrigeration device, carbon adsorber.
3	Superheated vapor, carbon adsorber.

Note: Unlike most of the control techniques available for complying with 8.0 of this regulation, carbon adsorbers are not considered to be a pollution prevention measure. Use of such units may impose additional cost and burden for a number of reasons. First, carbon adsorption units are generally more expensive than other controls listed in the options. Second, these units may present cross-media impacts such as effluent discharges if not properly operated and maintained, and spent carbon beds have to be disposed of as hazardous waste. When making decisions about what controls to install on halogenated HAP solvent cleaning machines to meet the requirements of 8.0, all of these factors should be weighed and pollution prevention measures are encouraged wherever possible.

8.4.3.2.2 Demonstrate that their solvent cleaning machine can achieve and maintain an idling emission limit of 0.10 kilograms per hour per square meter (0.021 pounds per hour per square foot) of solvent/air interface area as determined using the procedures in 8.6.1 of this regulation and Method 307 in Appendix A of 40 CFR Part 63.

8.4.4 Except as provided in 8.5 of this regulation for all cleaning machines, each owner or operator of an existing or new batch vapor or in-line solvent cleaning machine shall meet all of the following required work and operational practices specified in 8.4.4.1 through 8.4.4.15 of this regulation as applicable. The owner or operator of a continuous web cleaning machine shall comply with the requirements of 8.4.7 or 8.4.8 of this regulation, as appropriate, in lieu of complying with 8.4.4 of this regulation.

8.4.4.1 Control air disturbances across the cleaning machine opening or openings by incorporating the control equipment or techniques in 8.4.4.1.1 or 8.4.4.1.2 of this regulation.

8.4.4.1.1 Cover or covers to each solvent cleaning machine shall be in place during the idling mode, and during the downtime mode unless either the solvent has been removed from the machine or maintenance or monitoring is being performed that requires the cover or covers to not be in place.

8.4.4.1.2 A reduced room draft as described in 8.4.5.2.2 of this regulation.

8.4.4.2 The parts baskets or the parts being cleaned in an open-top batch vapor cleaning machine shall not occupy more than 50% of the solvent/air interface area unless the parts baskets or parts are introduced at a speed of 0.9 meters per minute (three feet per minute) or less.

8.4.4.3 Any spraying operations shall be done within the vapor zone or within a section of the solvent cleaning machine that is not directly exposed to the ambient air (i.e., a baffled or enclosed area of the solvent cleaning machine). The solvent spray shall be a solid fluid stream, not an atomized or shower spray.

8.4.4.4 Parts shall be oriented so that the solvent drains from them freely. Parts having cavities or blind holes shall be tipped or rotated before being removed from any solvent cleaning machine unless an equally effective approach has been approved by the Administrator.

8.4.4.5 Parts baskets or parts shall not be removed from any solvent cleaning machine until dripping has stopped.

8.4.4.6 During startup of each vapor cleaning machine, the primary condenser shall be turned on before the sump heater.

8.4.4.7 During shutdown of each vapor cleaning machine, the sump heater shall be turned off and the solvent vapor layer allowed to collapse before the primary condenser is turned off.

8.4.4.8 When solvent is added to or drained from any solvent cleaning machine, the solvent shall be transferred using threaded or other leak-proof couplings, and the discharge end of the pipe shall be located beneath the liquid solvent surface.

8.4.4.9 Each solvent cleaning machine and associated controls shall be maintained as recommended by the manufacturers of the equipment or using alternative maintenance practices that have been demonstrated to the Administrator's satisfaction to achieve the same or better results as those recommended by the manufacturer.

8.4.4.10 Each operator of a solvent cleaning machine shall complete and pass the applicable sections of the test of solvent cleaning procedures in Appendix A of 8.0 of this regulation if requested during an inspection by the Department.

8.4.4.11 Waste solvent, still bottoms, and sump bottoms shall be collected and stored in closed containers. The closed containers may contain a device that would allow pressure relief, but would not allow liquid solvent to drain from the container.

8.4.4.12 Sponges, fabric, wood, and paper products shall not be cleaned.

8.4.4.13 Spills during solvent transfer or use of the solvent cleaning machine shall be wiped up immediately. The wipe rags or other sorbent material shall be stored in closed containers meeting the requirements of 8.4.4.11 of this regulation.

8.4.4.14 Work area fans shall be located and positioned so that they do not blow across the opening of the solvent cleaning machine.

8.4.4.15 The owner or operator shall provide a permanent, legible, conspicuous label summarizing the operating requirements in 8.4.4 of this regulation.

8.4.5 Each owner or operator of a solvent cleaning machine complying with 8.4.2, 8.4.3, 8.4.7, or 8.4.8 of this regulation shall comply with the requirements specified in 8.4.5.1 through 8.4.5.4 of this regulation.

8.4.5.1 Conduct monitoring of each control device used to comply with 8.4 of this regulation as provided in 8.7 of this regulation.

8.4.5.2 Determine during each monitoring period whether each control device used to comply with these standards meets the requirements specified in 8.4.5.2.1 through 8.4.5.2.11 of this regulation.

8.4.5.2.1 If a freeboard refrigeration device is used to comply with these standards, the owner or operator shall ensure that the chilled air blanket temperature (in °F), measured at the center of the air blanket, is no greater than 30% of the solvent's boiling point.

8.4.5.2.2 If a reduced room draft is used to comply with these standards, the owner or operator shall comply with the requirements specified in 8.4.5.2.2.1 and 8.4.5.2.2.2 of this regulation.

8.4.5.2.2.1 Ensure that the flow or movement of air across the top of the freeboard area of the solvent cleaning machine or within the solvent cleaning machine enclosure does not exceed 15.2 meters per minute (50 feet per minute) at any time as measured using the procedures in 8.7.4 of this regulation.

8.4.5.2.2.2 Establish and maintain the operating conditions under which the wind speed was demonstrated to be 15.2 meters per minute (50 feet per minute) or less as described in 8.7.4 of this regulation.

8.4.5.2.3 If a working-mode cover is used to comply with these standards, the owner or operator shall comply with the requirements specified in 8.4.5.2.3.1 and 8.4.5.2.3.2 of this regulation.

8.4.5.2.3.1 Ensure that the cover opens only for part entrance and removal and completely covers the cleaning machine openings when closed.

8.4.5.2.3.2 Ensure that the working-mode cover is maintained free of cracks, holes, and other defects.

8.4.5.2.4 If an idling-mode cover is used to comply with these standards, the owner or operator shall comply with the requirements specified in 8.4.5.2.4.1 and 8.4.5.2.4.2 of this regulation.

8.4.5.2.4.1 Ensure that the cover is in place whenever parts are not in the solvent cleaning machine and completely covers the cleaning machine openings when in place.

8.4.5.2.4.2 Ensure that the idling-mode cover is maintained free of cracks, holes, and other defects.

8.4.5.2.5 If a dwell is used to comply with these standards, the owner or operator shall comply with the requirements specified in 8.4.5.2.5.1 and 8.4.5.2.5.2 of this regulation.

8.4.5.2.5.1 Determine the appropriate dwell time for each type of part or parts basket, or determine the minimum dwell time using the most complex part type or parts basket, as described in 8.6.4 of this regulation.

8.4.5.2.5.2 Ensure that, after cleaning, each part is held in the solvent cleaning machine freeboard area above the vapor zone for the dwell time determined for that particular part or parts basket, or for the minimum dwell time determined using the most complex part type or parts basket.

8.4.5.2.6 If a superheated vapor system is used to comply with these standards, the owner or operator shall comply with the requirements specified in 8.4.5.2.6.1 through 8.4.5.2.6.3 of this regulation.

8.4.5.2.6.1 Ensure that the temperature of the solvent vapor at the center of the superheated vapor zone is at least 10° F above the solvent's boiling point.

8.4.5.2.6.2 Ensure that the manufacturer's specifications for determining the minimum proper dwell time within the superheated vapor system is followed.

8.4.5.2.6.3 Ensure that parts remain within the superheated vapor for, at least, the minimum proper dwell time.

8.4.5.2.7 If a carbon adsorber in conjunction with a lip exhaust or other exhaust internal to the cleaning machine is used to comply with these standards, the owner or operator shall comply with the following requirements:

8.4.5.2.7.1 Ensure that the concentration of halogenated HAP solvents in the exhaust from this device does not exceed 25 parts per million of halogenated HAP solvents as measured using the procedure in 8.7.5 of this regulation. If the halogenated HAP solvent concentration in the carbon adsorber exhaust exceeds 25 parts per million, the owner or operator shall adjust the desorption schedule or replace the disposable canister, if not a regenerative system, so that the exhaust concentration of halogenated HAP solvent is brought below 25 parts per million.

8.4.5.2.7.2 Ensure that the carbon adsorber bed is not bypassed during desorption.

8.4.5.2.7.3 Ensure that the lip exhaust is located above the solvent cleaning machine cover so that the cover closes below the lip exhaust level.

8.4.5.2.8 If a superheated part system is used to comply with the standards for continuous web cleaning machines in 8.4.7 of this regulation, the owner or operator shall ensure that the temperature of the continuous web part is at least 10^{o} F above the solvent boiling point while the part is traveling through the cleaning machine.

8.4.5.2.9 If a squeegee system is used to comply with the continuous web cleaning requirements of 8.4.7.3.3 or 8.4.8.2.1 of this regulation, the owner or operator shall comply with the following requirements.

8.4.5.2.9.1 Determine the appropriate maximum product throughput for the squeegees used in the squeegee system, as described in 8.6.6 of this regulation.

8.4.5.2.9.2 Conduct the weekly monitoring required in 8.7.1.3 of this regulation. Record the results required in 8.8.1.6 of this regulation.

8.4.5.2.9.3 Calculate the total amount of continuous web product processed since the squeegees were replaced and compare to the maximum product throughput for the squeegees.

8.4.5.2.9.4 Ensure squeegees are replaced at or before the maximum product throughput is attained.

8.4.5.2.9.5 Redetermine the maximum product throughput for the squeegees if any solvent film is visible on the continuous web part immediately after it exits the cleaning machine.

8.4.5.2.10 If an air knife system is used to comply with the continuous web cleaning requirements of 8.4.7.3.3 or 8.4.8.2.1 of this regulation, the owner or operator shall comply with the following requirements.

8.4.5.2.10.1 Determine the air knife parameter and parameter value that demonstrate to the Department's satisfaction that the air knife is properly operating. An air knife is properly operating if no visible solvent film remains on the continuous web part after it exits the cleaning machine.

8.4.5.2.10.2 Maintain the selected air knife parameter value at the level determined in 8.4.5.2.10.1 of this regulation.

8.4.5.2.10.3 Conduct the weekly monitoring required in 8.7.1.3 of this regulation.

8.4.5.2.10.4 Redetermine the proper air knife parameter value if any solvent film is visible on the continuous web part immediately after it exits the cleaning machine.

8.4.5.2.11 If a combination squeegee and air knife system is used to comply with the continuous web cleaning requirements of 8.4.7.3.3 or 8.4.8.2.1 of this regulation, the owner or operator shall comply with the following requirements.

8.4.5.2.11.1 Determine the system parameter and value that demonstrate to the Department's satisfaction that the system is properly operating.

8.4.5.2.11.2 Maintain the selected parameter value at the level determined in 8.4.5.2.11.1 of this regulation.

8.4.5.2.11.3 Conduct the weekly monitoring required in 8.7.1.3 of this regulation.

8.4.5.2.11.4 Redetermine the proper parameter value if any solvent film is visible on the continuous web part immediately after it exits the cleaning machine.

8.4.5.3 If any of the requirements of 8.4.5.2 of this regulation are not met, determine whether an exceedance has occurred using the criteria in 8.4.5.3.1 and 8.4.5.3.2 of this regulation.

8.4.5.3.1 An exceedance has occurred if the requirements of 8.4.5.2.2.2, 8.4.5.2.3.1, 8.4.5.2.4.1, 8.4.5.2.5, 8.4.5.2.6.2, 8.4.5.2.6.3, 8.4.5.2.7.2, 8.4.5.2.7.3, 8.4.5.2.8, 8.4.5.2.9.1 through 8.4.5.2.9.4, 8.4.5.2.10.1 through 8.4.5.2.10.3, or 8.4.5.2.11.1 through 8.4.5.2.11.3 of this regulation have not been met.

8.4.5.3.2 An exceedance has occurred if the requirements of 8.4.5.2.1, 8.4.5.2.2.1, 8.4.5.2.3.2, 8.4.5.2.4.2, 8.4.5.2.6.1, 8.4.5.2.7.1, 8.4.5.2.9.5, 8.4.5.2.10.4, or 8.4.5.2.11.4 of this regulation have not been met and are not corrected within 15 days of detection. Adjustments or repairs shall be made to the solvent cleaning system or control device to reestablish required levels. The parameter must be remeasured immediately upon adjustment or repair and demonstrated to be within required limits.

8.4.5.4 The owner or operator shall report all exceedances and all corrections and adjustments made to avoid an exceedance as specified in 8.9.8 of this regulation.

8.4.6 Each owner or operator of a batch vapor or in-line solvent cleaning machine complying with the idling emission limit standards in 8.4.2.1.2, 8.4.2.2.2, 8.4.3.1.2, or 8.4.3.2.2 of this regulation shall comply with the requirements specified in 8.4.6.1 through 8.4.6.5 of this regulation.

8.4.6.1 Conduct an initial performance test to comply with the requirements specified in 8.4.6.1.1 and 8.4.6.1.2 of this regulation.

8.4.6.1.1 Demonstrate compliance with the applicable idling emission limit.

8.4.6.1.2 Establish parameters that will be monitored to demonstrate compliance. If a control device is used that is listed in 8.4.5.2 of this regulation, then the requirements for that control device as listed in 8.4.5.2 shall be used unless the owner or operator can demonstrate to the Administrator's satisfaction that an alternative strategy is equally effective.

8.4.6.2 Conduct the periodic monitoring of the parameters used to demonstrate compliance as described in 8.7.6 of this regulation.

8.4.6.3 Operate the solvent cleaning machine within parameters identified in the initial performance test.

8.4.6.4 If any of the requirements in 8.4.6.1 through 8.4.6.3 of this regulation are not met, determine whether an exceedance has occurred using the criteria in 8.4.6.4.1 and 8.4.6.4.2 of this regulation.

8.4.6.4.1 If using a control listed in 8.4.5 of this regulation, the owner or operator shall comply with the appropriate parameter values in 8.4.5.2 of this regulation and the exceedance delineations in 8.4.5.3.1 and 8.4.5.3.2 of this regulation.

8.4.6.4.2 If using a control not listed in 8.4.5 of this regulation, the owner or operator shall indicate whether the exceedance of the parameters that are monitored to determine the proper functioning of this control would be classified as an immediate exceedance or whether a 15 day repair period would be allowed. This information must be submitted to the Administrator for approval.

8.4.6.5 The owner or operator shall report all exceedances and all corrections and adjustments made to avoid an exceedance as specified in 8.9.8 of this regulation.

8.4.7 Except as provided in 8.4.8 and 8.5 of this regulation for remote reservoir continuous web cleaning machines, each owner or operator of a continuous web cleaning machine shall comply with 8.4.7.1 through 8.4.7.4 of this regulation for each continuous web cleaning machine.

8.4.7.1 Except as provided in 8.4.7.2 of this regulation, install, maintain, and operate one of the following control combinations on each continuous web cleaning machine.

8.4.7.1.1 For each existing continuous web cleaning machine, the following control combinations are allowed:

8.4.7.1.1.1 Superheated vapor or superheated part technology, and a freeboard ratio of 1.0 or greater.

8.4.7.1.1.2 Freeboard refrigeration device and a freeboard ratio of 1.0 or greater.

8.4.7.1.1.3 Carbon adsorption system meeting the requirements of 8.4.5.2.7 of this regulation.

8.4.7.1.2 For each new continuous web cleaning machine, the following control combinations are allowed:

8.4.7.1.2.1 Superheated vapor or superheated part technology, and a freeboard refrigeration device.

8.4.7.1.2.2 A freeboard refrigeration device and a carbon adsorber meeting the requirements of 8.4.5.2.7 of this regulation.

8.4.7.1.2.3 Superheated vapor or superheated part technology, and a carbon adsorber meeting the requirements of 8.4.5.2.7 of this regulation.

8.4.7.2 If a carbon adsorber system can be demonstrated to the Department's satisfaction to have an overall solvent control efficiency (i.e., capture efficiency times removal efficiency) of 70% or greater, this system is equivalent to the options in 8.4.7 of this regulation.

8.4.7.3 In lieu of complying with the provisions of 8.4.1 of this regulation, the owner or operator of a continuous web cleaning machine shall comply with the following provisions:

8.4.7.3.1 Each cleaning machine shall meet one of the following control equipment or technique requirements:

8.4.7.3.1.1 An idling and downtime mode cover, as described in 8.4.4.1.1 of this regulation, that may be readily opened or closed; that completely covers the cleaning machine openings when in place; and is free of cracks, holes, and other defects. A continuous web part that completely occupies an entry or exit port when the machine is idle is considered to meet this requirement.

8.4.7.3.1.2 A reduced room draft as described in 8.4.5.2.2 of this regulation.

8.4.7.3.1.3 Gasketed or leak-proof doors that separate both the continuous web part feed reel and take-up reel from the room atmosphere if the doors are checked according to the requirements of 8.4.5.2.3 of this regulation.

8.4.7.3.1.4 A cleaning machine that is demonstrated to the Department's satisfaction to be under negative pressure during idling and downtime and is vented to a carbon adsorption system that meets the requirements of either 8.4.5.2.7 or 8.4.7.2 of this regulation.

8.4.7.3.2 Each continuous web cleaning machine shall have a freeboard ratio of 0.75 or greater unless that cleaning machine is a remote reservoir continuous web cleaning machine.

8.4.7.3.3 Each cleaning machine shall have an automated parts handling system capable of moving parts or parts baskets at a speed of 3.4 meters per minute (11 feet per minute) or less from the initial loading of parts through removal of cleaned parts, unless the cleaning machine is a continuous web cleaning machine that has a squeegee system or air knife system installed, maintained, and operated on the continuous web cleaning machine meeting the requirements of 8.4.5 of this regulation.

8.4.7.3.4 Each vapor cleaning machine shall be equipped with a device that shuts off the sump heat if the sump liquid solvent level drops to the sump heater coils. This requirement does not apply to a vapor cleaning machine that uses steam to heat the solvent.

8.4.7.3.5 Each vapor cleaning machine shall be equipped with a vapor level control device that shuts off sump heat if the vapor level in the vapor cleaning machine rises above the height of the primary condenser.

8.4.7.3.6 Each vapor cleaning machine shall have a primary condenser.

8.4.7.3.7 Each cleaning machine that uses a lip exhaust or any other exhaust within the solvent cleaning machine shall be designed and operated to route all collected solvent vapors through a properly operated and maintained carbon adsorber that meets the requirements of either 8.4.5.2.7 or 8.4.7.2 of this regulation.

8.4.7.4 In lieu of complying with the provisions of 8.4.4 of this regulation, the owner or operator of a continuous web cleaning machine shall comply with the following provisions:

8.4.7.4.1 Control air disturbances across the cleaning machine opening or openings by incorporating one of the following control equipment or techniques:

8.4.7.4.1.1 Cover or covers to each solvent cleaning machine shall be in place during the idling mode and during the downtime mode unless either the solvent has been removed from the machine or maintenance or monitoring is being performed that requires the cover or covers to not be in place. A continuous web part that completely occupies an entry or exit port when the machine is idle is considered to meet this requirement.

8.4.7.4.1.2 A reduced room draft as described in 8.4.5.2.2 of this regulation.

8.4.7.4.1.3 Gasketed or leak-proof doors or covers that separate both the continuous web part feed reel and take-up reel from the room atmosphere if the doors are checked according to the requirements of 8.4.5.2.3 of this regulation.

8.4.7.4.1.4 A cleaning machine that is demonstrated to the Department's satisfaction to be under negative pressure during idling and downtime and is vented to a carbon adsorption system that meets either the requirements of 8.4.5.2.7 or 8.4.7.2 of this regulation.

8.4.7.4.2 Any spraying operations shall be conducted in a section of the solvent cleaning machine that is not directly exposed to the ambient air (i.e., a baffled or enclosed area of the solvent cleaning

machine) or within a machine having a door or cover that meets the requirements of 8.4.7.4.1.3 of this regulation. The solvent spray shall be a solid fluid stream, not an atomized or shower spray.

8.4.7.4.3 During startup of each vapor cleaning machine, the primary condenser shall be turned on before the sump heater.

8.4.7.4.4 During shutdown of each vapor cleaning machine, the sump heater shall be turned off and the solvent vapor layer allowed to collapse before the primary condenser is turned off.

8.4.7.4.5 When solvent is added to or drained from any solvent cleaning machine, the solvent shall be transferred using threaded or other leak-proof couplings, and the discharge end of the pipe shall be located beneath the liquid solvent surface.

8.4.7.4.6 Each solvent cleaning machine and associated controls shall be maintained as recommended by the manufacturers of the equipment or using alternative maintenance practices that have been demonstrated to the Administrator's satisfaction to achieve the same or better results as those recommended by the manufacturers.

8.4.7.4.7 Waste solvent, still bottoms, sump bottoms, and waste absorbent materials used in the cleaning process for continuous web cleaning machines shall be collected and stored in waste containers. The closed containers may contain a device that would allow pressure relief, but would not allow liquid solvent to drain from the container.

8.4.7.4.8 Except as provided in 8.4.7.4.9 of this regulation, sponges, fabric, wood, and paper products shall not be cleaned.

8.4.7.4.9 The prohibition 8.4.7.4.8 of this regulation does not apply to absorbent materials that are used as part of the cleaning process of continuous web cleaning machines, including rollers and roller covers.

8.4.7.4.10 Each operator of a solvent cleaning machine shall complete and pass the applicable sections of the test of solvent cleaning procedures in Appendix A of ~~7.0~~ 8.0 of this regulation if requested during an inspection by the Department.

8.4.7.4.11 Spills during solvent transfer or use of the solvent cleaning machine shall be wiped up immediately. The wipe rags or other sorbent material shall be stored in closed containers meeting the requirements of 8.4.7.4.7 of this regulation.

8.4.7.4.12 Work area fans shall be located and positioned so that they do not blow across the opening of the solvent cleaning machine.

8.4.7.4.13 The owner or operator shall provide a permanent, legible, conspicuous label summarizing the operating requirements in 8.4.7.4 of this regulation.

8.4.8 Except as provided in 8.5 of this regulation, each owner or operator of a remote reservoir continuous web cleaning machine shall comply with 8.4.8.1 through 8.4.8.3 of this regulation.

8.4.8.1 Except as provided in 8.4.8.2 of this regulation, install, maintain, and operate one of the following controls on each new remote reservoir continuous web cleaning machine.

8.4.8.1.1 Superheated vapor or superheated part technology.

8.4.8.1.2 A carbon adsorber meeting the requirements of 8.4.5.2.7 of this regulation.

8.4.8.1.3 If a carbon adsorber system can be demonstrated to the Department's satisfaction to have an overall solvent control efficiency (i.e., capture efficiency times removal efficiency) of 70% or greater, this system is equivalent to the options in 8.4.8.1.1 and 8.4.8.1.2 of this regulation.

8.4.8.2 In lieu of complying with the provisions of 8.4.1 of this regulation, the owner or operator of a remote reservoir continuous web cleaning machine shall comply with the following provisions:

8.4.8.2.1 Each cleaning machine shall have an automated parts handling system capable of moving parts or parts baskets at a speed of 3.4 meters per minute (11 feet per minute) or less from the initial loading of parts through removal of cleaned parts, unless the cleaning machine is a continuous web cleaning machine that has a squeegee system or air knife system installed, maintained, and operated on the continuous web cleaning machine meeting the requirements of 8.4.5 of this regulation.

8.4.8.2.2 Each vapor cleaning machine shall be equipped with a device that shuts off the sump heat if the sump liquid solvent level drops to the sump heater coils.

8.4.8.2.3 Each vapor cleaning machine shall be equipped with a vapor level control device that shuts off sump heat if the vapor level in the vapor cleaning machine rises above the height of the primary condenser.

8.4.8.2.4 Each vapor cleaning machine shall have a primary condenser.

8.4.8.2.5 Each cleaning machine that uses a lip exhaust or any other exhaust within the solvent cleaning machine shall be designed and operated to route all collected solvent vapors through a properly operated and maintained carbon adsorber that meets the requirements of either 8.4.5.2.7 or 8.4.7.2 of this regulation.

8.4.8.3 In lieu of complying with the provisions of 8.4.4 of this regulation, the owner or operator of a remote reservoir continuous web cleaning machine shall comply with the following provisions:

8.4.8.3.1 Any spraying operations shall be conducted in a section of the solvent cleaning machine that is not directly exposed to the ambient air (i.e., a baffled or enclosed area of the solvent cleaning machine) or within a machine having a door or cover that meets the requirements of 8.4.7.4.1.3 of this regulation. The solvent spray shall be a solid fluid stream, not an atomized or shower spray.

8.4.8.3.2 During startup of each vapor cleaning machine, the primary condenser shall be turned on before the sump heater.

8.4.8.3.3 During shutdown of each vapor cleaning machine, the sump heater shall be turned off and the solvent vapor layer allowed to collapse before the primary condenser is turned off.

8.4.8.3.4 When solvent is added to or drained from any solvent cleaning machine, the solvent shall be transferred using threaded or other leak-proof couplings, and the discharge end of the pipe shall be located beneath the liquid solvent surface.

8.4.8.3.5 Each solvent cleaning machine and associated controls shall be maintained as recommended by the manufacturers of the equipment or using alternative maintenance practices that have been demonstrated to the Administrator's satisfaction to achieve the same or better results as those recommended by the manufacturers.

8.4.8.3.6 Waste solvent, still bottoms, sump bottoms, and waste absorbent materials used in the cleaning process for continuous web cleaning machines shall be collected and stored in closed containers.

The closed containers may contain a device that would allow pressure relief, but would not allow liquid solvent to drain from the container.

8.4.8.3.7 Except as provided in 8.4.8.3.8 of this regulation, sponges, fabric, wood, and paper products shall not be cleaned.

8.4.8.3.8 The prohibition in 8.4.8.3.7 of this regulation does not apply to absorbent materials that are used as part of the cleaning process of continuous web cleaning machines, including rollers and roller covers.

8.4.8.3.9 Each operator of a solvent cleaning machine shall complete and pass the applicable sections of the test of solvent cleaning procedures in Appendix A of 8.0 of this regulation if requested during an inspection by the Department.

8.4.8.3.10 Spills during solvent transfer or use of the solvent cleaning machine shall be wiped up immediately. The wipe rags or other sorbent material shall be stored in closed containers meeting the requirements of 8.4.8.3.6 of this regulation.

8.4.8.3.11 Work area fans shall be located and positioned so that they do not blow across the opening of the solvent cleaning machine.

8.4.8.3.12 The owner or operator shall provide a permanent, legible, conspicuous label summarizing the operating requirements in 8.4.8.3 of this regulation.

8.5 Alternative standards.

8.5.1 As an alternative to meeting the requirements in 8.4 of this regulation, each owner or operator of a batch vapor or in-line solvent cleaning machine can elect to comply with the requirements of 8.5 of this regulation. An owner or operator of a solvent cleaning machine who elects to comply with 8.5 shall comply with the requirements specified in either 8.5.1.1 or 8.5.1.2 of this regulation.

8.5.1.1 If the cleaning machine has a solvent/air interface, as defined in 8.2 of this regulation, the owner or operator shall comply with the requirements specified in 8.5.1.1.1 and 8.5.1.1.2 of this regulation.

8.5.1.1.1 Maintain a log of solvent additions and deletions for each solvent cleaning machine.

8.5.1.1.2 Ensure that the emissions from each solvent cleaning machine are equal to or less than the applicable emission limit presented in Table 8-5 of this regulation as determined using the procedures in 8.6.2 and 8.6.3 of this regulation.

Table 8-5 - Emission Limits for Batch Vapor and In-Line Solvent Cleaning Machines With a Solvent/Air Interface

Solvent cleaning machine	Three-month rolling average monthly emission limit (kilograms/square meters/month)
Batch vapor solvent cleaning machines	150

Existing in-line solvent cleaning machines	153
New in-line solvent cleaning machines	99

8.5.1.2 If the cleaning machine is a batch vapor cleaning machine and does not have a solvent/air interface, the owner or operator shall comply with the requirements specified in 8.5.1.2.1 and 8.5.1.2.2 of this regulation.

8.5.1.2.1 Maintain a log of solvent additions and deletions for each solvent cleaning machine.

8.5.1.2.2 Ensure that the emissions from each solvent cleaning machine are equal to or less than the appropriate limits as described in 8.5.1.2.2.1 or 8.5.1.2.2.2 of this regulation, as applicable.

8.5.1.2.2.1 For cleaning machines with a cleaning capacity, as reported in 8.9.4 of this regulation, that is less than or equal to 2.95 cubic meters (104 cubic feet), the emission limit shall be determined using Table 8-6 of this regulation. If the cleaning capacity of the cleaning machine falls between two cleaning capacity sizes, then the lower of the two emission limits applies.

Table 8-6 - Emission Limits for Cleaning Machines Without a Solvent/Air Interface

Cleaning capacity (cubic meters)	Three-month rolling average monthly emission limit (kilograms/month)	Cleaning capacity (cubic meters)	Three-month rolling average monthly emission limit (kilograms/month)
0.00	0	1.50	421
0.05	55	1.55	429
0.10	83	1.60	438
0.15	106	1.65	446
0.20	126	1.70	454
0.25	144	1.75	462
0.30	160	1.80	470
0.35	176	1.85	477
0.40	190	1.90	485
0.45	204	1.95	493
0.50	218	2.00	500
0.55	231	2.05	508
0.60	243	2.10	515
0.65	255	2.15	522

0.70	266	2.20	530
0.75	278	2.25	537
0.80	289	2.30	544
0.85	299	2.35	551
0.90	310	2.40	558
0.95	320	2.45	565
1.00	330	2.50	572
1.05	340	2.55	579
1.10	349	2.60	585
1.15	359	2.65	592
1.20	368	2.70	599
1.25	377	2.75	605
1.30	386	2.80	612
1.35	395	2.85	619
1.40	404	2.90	625
1.45	412	2.95	632

8.5.1.2.2.2 For cleaning machines with a cleaning capacity as reported in 8.9.4 of this regulation, that is greater than 2.95 cubic meters, the emission limit shall be determined using equation 8-1.

$$EL = 330 * (Vol)^{0.6} \qquad (8\text{-}1)$$

where:

EL = the three-month rolling average monthly emission limit (kilograms/month).

Vol = the cleaning capacity of the solvent cleaning machine (cubic meters).

8.5.2 Each owner or operator of a batch vapor or in-line solvent cleaning machine complying with 8.5.1 of this regulation shall demonstrate compliance with the applicable three-month rolling average monthly emission limit on a monthly basis as described in 8.6.2 and 8.6.3 of this regulation.

8.5.3 If the applicable three-month rolling average emission limit is not met, an exceedance has occurred. All exceedances shall be reported as required in 8.9.8 of this regulation.

8.5.4 As an alternative to meeting the requirements in 8.4 of this regulation, each owner or operator of a continuous web cleaning machine can demonstrate an overall cleaning system control efficiency of 70% or greater using the procedures in 8.6.7 of this regulation. This demonstration can be made for either a single cleaning machine or for a solvent cleaning system that contains one or more cleaning machines and ancillary equipment, such as storage tanks and distillation units. If the demonstration is made for a cleaning system,

the facility must identify any modifications required to the procedures in 8.6.7 and they must be approved by the Administrator.

8.6 Test methods.

8.6.1 Except as provided in 8.6.6 and 8.6.7 of this regulation for continuous web cleaning machines, each owner or operator of a batch vapor or in-line solvent cleaning machine complying with an idling emission limit standard in 8.4.2.1.2, 8.4.2.2.2, 8.4.3.1.2, or 8.4.3.2.2 of this regulation shall determine the idling emission rate of the solvent cleaning machine using Method 307 in Appendix A of 40 CFR Part 63.

8.6.2 Except as provided in 8.6.7 of this regulation for continuous web cleaning machines, each owner or operator of a batch vapor or in-line solvent cleaning machine complying with 8.5 of this regulation shall, on the first operating day of every month ensure that the solvent cleaning machine system contains only clean liquid solvent. This includes, but is not limited to, fresh unused solvent, recycled solvent, and used solvent that have been cleaned of soils. A fill line must be indicated during the first month the measurements are made. The solvent level within the machine must be returned to the same fill-line each month, immediately prior to calculating monthly emissions as specified in 8.6.3 of this regulation. The solvent cleaning machine does not have to be emptied and filled with fresh unused solvent prior to the calculations.

8.6.3 Except as provided in 8.6.6 and 8.6.7 of this regulation for continuous web cleaning machines, each owner or operator of a batch vapor or in-line solvent cleaning machine complying with 8.5 of this regulation shall, on the first operating day of the month, comply with the requirements specified in 8.6.3.1 through 8.6.3.3 of this regulation.

8.6.3.1 Using the records of all solvent additions and deletions for the previous monthly reporting period required in 8.5.1 of this regulation, determine solvent emissions (Ei and En) using equation 8-2 for cleaning machines with a solvent/air interface and using equation 8-3 for cleaning machines without a solvent/air interface:

$$Ei = (SAi - LSRi - SSRi) / AREAi \quad (8\text{-}2)$$

$$En = (SAi - LSRi - SSRi) \quad (8\text{-}3)$$

where:

Ei = the total halogenated HAP solvent emissions from the solvent cleaning machine during the most recent monthly reporting period i, (kilograms of solvent per square meter of solvent/air interface area per month).

En = the total halogenated HAP solvent emissions from the solvent cleaning machine during the most recent monthly reporting period i, (kilograms of solvent per month).

SAi = the total amount of halogenated HAP liquid solvent added to the solvent cleaning machine during the most recent monthly reporting period i, (kilograms of solvent per month).

LSRi = the total amount of halogenated HAP liquid solvent removed from the solvent cleaning machine during the most recent monthly reporting period i, (kilograms of solvent per month).

SSRi = the total amount of halogenated HAP solvent removed from the solvent cleaning machine in solid waste, obtained as described in 8.6.3.2 of this regulation, during the most recent monthly reporting period i, (kilograms of solvent per month).

AREAi = the solvent/air interface area of the solvent cleaning machine (square meters).

8.6.3.2 Determine SSRi using the method specified in 8.6.3.2.1 or 8.6.3.2.2 of this regulation.

8.6.3.2.1 From tests conducted using Method 25d in Appendix A of 40 CFR Part 60.

8.6.3.2.2 By engineering calculations included in the compliance report.

8.6.3.3 Determine the monthly rolling average (EAi and EAn) for the three-month period ending with the most recent reporting period using equation 8-4 for cleaning machines with a solvent/air interface or equation 8-5 for cleaning machines without a solvent/air interface:

$$EAi = \frac{\sum_{j=1}^{3} Ei}{3} \qquad (8\text{-}4)$$

$$EAn = \frac{\sum_{j=1}^{3} En}{3} \qquad (8\text{-}5)$$

where:

EAi = the average halogenated HAP solvent emissions over the preceding three monthly reporting periods, (kilograms of solvent per square meter of solvent/air interface area per month).

EAn = the average halogenated HAP solvent emissions over the preceding three monthly reporting periods, (kilograms of solvent per month).

Ei = halogenated HAP solvent emissions for each month (j) for the most recent three monthly reporting periods, (kilograms of solvent per square meter of solvent/air interface area per month).

En = halogenated HAP solvent emissions for each month (j) for the most recent three monthly reporting periods, (kilograms of solvent per month).

j = 1 = the most recent monthly reporting period.

j = 2 = the monthly reporting period immediately prior to j = 1.

j = 3 = the monthly reporting period immediately prior to j = 2.

8.6.4 Each owner or operator of a batch vapor or in-line solvent cleaning machine using a dwell to comply with 8.4 of this regulation shall determine the appropriate dwell time for each part or parts basket using the procedure specified in 8.6.4.1 and 8.6.4.2 of this regulation.

8.6.4.1 Determine the amount of time for the part or parts basket to cease dripping once placed in the vapor zone. The part or parts basket used for this determination must be at room temperature before being placed in the vapor zone.

8.6.4.2 The proper dwell time for parts to remain in the freeboard area above the vapor zone is no less than 35% of the time determined in 8.6.4.1 of this regulation.

8.6.5 An owner or operator of a source shall determine their potential to emit from all solvent cleaning operations, using the procedures described in 8.6.5.1 through 8.6.5.3 of this regulation. A facility's total potential to emit is the sum of the HAP emissions from all solvent cleaning operations, plus all HAP emissions from other sources within the facility.

8.6.5.1 Determine the potential to emit (PTEi) for each individual solvent cleaning machine using equation 8-6.

$$PTEi = Hi * Wi * SAIi \quad (8\text{-}6)$$

where:

PTEi = the potential to emit for solvent cleaning machine i, (kilograms of solvent per year).

Hi = hours of operation for solvent cleaning machine i, (hours per year).

= 8760 hours per year, unless otherwise restricted by a Federally enforceable requirement.

Wi = the working mode uncontrolled emission rate, (kilograms per square meter per hour).

= 1.95 kilograms per square meter per hour for batch vapor and cold cleaning machines.

= 1.12 kilograms per square meter per hour for in-line cleaning machines.

SAIi = solvent/air interface area of each solvent cleaning machine i, (square meters). The solvent/air interface area for those machines that have a solvent/air interface is defined in 8.2 of this regulation. Cleaning machines that do not have a solvent/air interface shall calculate a solvent/air interface area using the procedure in 8.6.5.2 of this regulation.

8.6.5.2 Cleaning machines that do not have a solvent/air interface shall calculate a solvent/air interface area (SAI) using equation 8-7.

$$SAI = 2.20 * (Vol)^{0.6} \quad (8\text{-}7)$$

where:

SAI = the solvent/air interface area, (square meters).

Vol = the cleaning capacity of the solvent cleaning machine, (cubic meters).

8.6.5.3 Sum the PTEi for all solvent cleaning operations to obtain the total potential to emit for solvent cleaning operations at the facility.

8.6.6 Each owner or operator of a continuous web cleaning machine using a squeegee system to comply with 8.4.7.3 of this regulation shall determine the maximum product throughput using the method described in 8.6.6.1 through 8.6.6.4 of this regulation. The maximum product throughput for each squeegee type used at a facility must be determined prior to November 11, 2001, the compliance date for these solvent cleaning machines.

8.6.6.1 Conduct daily visual inspections of the continuous web part. This monitoring shall be conducted at the point where the continuous web part exits the squeegee system. It is not necessary for the squeegees to be new at the time monitoring is begun if the following two conditions are met:

8.6.6.1.1 The continuous web part leaving the squeegee system has no visible solvent film.

8.6.6.1.2 The amount of continuous web that has been processed through the squeegees since the last replacement is known.

8.6.6.2 Continue daily monitoring until a visible solvent film is noted on the continuous web part.

8.6.6.3 Determine the length of continuous web product that has been cleaned using the squeegee since it was installed.

8.6.6.4 The maximum product throughput for the purposes of 8.0 of this regulation is equal to the time it takes to clean 95% of the length of product determined in 8.6.6.3 of this regulation. This time period, in days, may vary depending on the amount of continuous web product cleaned each day.

8.6.7 Each owner or operator of a continuous web cleaning machine demonstrating compliance with the alternative standard of 8.5.4 of this regulation shall, on the first day of every month, ensure that the solvent cleaning machine contains only clean liquid solvent. This includes, but is not limited to, fresh unused solvent, recycled solvent, and used solvent that have been cleaned of soils. A fill-line must be indicated during the first month the measurements are made. The solvent level with the machine must be returned to the same fill-line each month, immediately prior to calculating overall cleaning system control efficiency emissions as specified in 8.6.8 of this regulation. The solvent cleaning machine does not need to be emptied and filled with fresh unused solvent prior to the calculation.

8.6.8 Each owner or operator of a continuous web cleaning machines complying with 8.5.4 of this regulation shall, on the first operating day of the month, comply with the following requirements.

8.6.8.1 Using the records of all solvent additions, solvent deletions, and solvent recovered from the carbon adsorption system for the previous monthly reporting period required in 8.8.5 of this regulation, determine the overall cleaning system control efficiency (Eo) using equation 8-8 as follows:

$$Eo = (Ri * 100) / (Ri + Sai - SSRi) \qquad (8\text{-}8)$$

where:

Eo = overall cleaning system control efficiency.

Ri = the total amount of halogenated HAP liquid solvent recovered from the carbon adsorption system and recycled to the solvent cleaning system during the most recent monthly reporting period, i, (kilograms of solvent per month).

Sai = the total amount of halogenated HAP liquid solvent added to the solvent cleaning system during the most recent monthly reporting period, i, (kilograms of solvent per month).

SSRi = the total amount of halogenated HAP solvent removed from the solvent cleaning system in solid waste, obtained as described in 8.6.3.2 of this regulation, during the most recent monthly reporting period, i, (kilograms of solvent per month).

8.7 Monitoring procedures.

8.7.1 Except as provided in 8.7.7 of this regulation, each owner or operator of a batch vapor or in-line solvent cleaning machine complying with the equipment standards in 8.4.2.1.1, 8.4.2.2.1, 8.4.3.1.1, 8.4.3.2.1, 8.4.7.1, or 8.4.7.2 of this regulation shall conduct monitoring and record the results on a weekly basis for the control devices, as appropriate, specified in 8.7.1.1 through 8.7.1.5 of this regulation.

8.7.1.1 If a freeboard refrigeration device is used to comply with these standards, the owner or operator shall use a thermometer or thermocouple to measure the temperature at the center of the air blanket during the idling mode.

8.7.1.2 If a superheated vapor system is used to comply with these standards, the owner or operator shall use a thermometer or thermocouple to measure the temperature at the center of the superheated solvent vapor zone while the solvent cleaning machine is in the idling mode.

8.7.1.3 If a squeegee system, air knife system, or combination squeegee and air knife system is used to comply with the requirements of 8.4.7 or 8.4.8 of this regulation, the owner or operator shall visually inspect the continuous web part exiting the solvent cleaning machine to ensure that no solvent film is visible on the part.

8.7.1.4 Except as provided in 8.7.1.5 of this regulation, if a superheated part system is used to comply with the requirements of 8.4.7 or 8.4.8 of this regulation, the owner or operator shall use a thermometer, thermocouple, or other temperature measurement device to measure the temperature of the continuous web part while it is in the solvent cleaning machine. This measurement can also be taken at the exit of the solvent cleaning machine.

8.7.1.5 As an alternative to complying with 8.7.1.4 of this regulation, the owner or operator can provide data, sufficient to satisfy the Department, that demonstrate that the part temperature remains above the boiling point of the solvent at all times that the part is within the continuous web solvent cleaning machine. This data could include design and operating conditions such as information supporting any exothermic reaction inherent in the processing.

8.7.2 Except as provided in 8.7.7 of this regulation, each owner or operator of a batch vapor or in-line solvent cleaning machine complying with the equipment standards of 8.4.2.1.1, 8.4.2.2.1, 8.4.3.1.1, or 8.4.3.2.1 of this regulation shall conduct monitoring and record the results on a monthly basis for the control devices, as appropriate, specified in 8.7.2.1 and 8.7.2.2 of this regulation.

8.7.2.1 If a cover (working-mode, downtime-mode, or idling-mode cover) is used to comply with these standards, the owner or operator shall conduct a visual inspection to determine if the cover is opening and closing properly, completely covers the cleaning machine openings when closed, and is free of cracks, holes, and other defects.

8.7.2.2 If a dwell is used, the owner or operator shall determine the actual dwell time by measuring the period of time that parts are held within the freeboard area of the solvent cleaning machine after cleaning.

8.7.3 Except as provided in 8.7.7 of this regulation, each owner or operator of a batch vapor or in-line solvent cleaning machine complying with the equipment or idling standards in 8.4 of this regulation shall monitor the hoist speed and record the results as described in 8.7.3.1 through 8.7.3.4 of this regulation.

8.7.3.1 The owner or operator shall determine the hoist speed by measuring the time it takes for the hoist to travel a measured distance. The speed is equal to the distance in meters divided by the time in minutes (meters per minute).

8.7.3.2 The monitoring shall be conducted monthly. If after the first year, no exceedances of the hoist speed are measured, the owner or operator may begin monitoring the hoist speed quarterly.

8.7.3.3 If an exceedance of the hoist speed occurs during quarterly monitoring, the monitoring frequency returns to monthly until another year of compliance without an exceedance is demonstrated.

8.7.3.4 If an owner or operator can demonstrate to the Department's satisfaction in the initial compliance report that the hoist cannot exceed a speed of 3.4 meters per minute (11 feet per minute), the required monitoring frequency is quarterly, including during the first year of compliance.

8.7.4 Except as provided in 8.7.7 of this regulation, each owner or operator of a batch vapor or in-line solvent cleaning machine complying with the equipment standards in 8.4.2.1.1, 8.4.2.2.1, 8.4.3.1.1, or 8.4.3.2.1 of this regulation using a reduced room draft shall conduct monitoring and record the results as specified in 8.7.4.1 or 8.7.4.2 of this regulation.

8.7.4.1 If the reduced room draft is maintained by controlling room parameters (i.e., redirecting fans, closing doors and windows, etc.), the owner or operator shall conduct an initial monitoring test of the wind speed and of room parameters, quarterly monitoring of wind speed, and weekly monitoring of room parameters as specified in 8.7.4.1.1 and 8.7.4.1.2 of this regulation.

8.7.4.1.1 Measure the wind speed within 6 inches above the top of the freeboard area of the solvent cleaning machine using the procedure specified in 8.7.4.1.1.1 through 8.7.4.1.1.4 of this regulation.

8.7.4.1.1.1 Determine the direction of the wind current by slowly rotating a velometer or similar device until the maximum speed is located.

8.7.4.1.1.2 Orient a velometer in the direction of the wind current at each of the four corners of the machine.

8.7.4.1.1.3 Record the reading for each corner.

8.7.4.1.1.4 Average the values obtained at each corner and record the average wind speed.

8.7.4.1.2 Monitor on a weekly basis the room parameters established during the initial compliance test that are used to achieve the reduced room draft.

8.7.4.2 If an enclosure (full or partial) is used to achieve a reduced room draft, the owner or operator shall conduct an initial monitoring test and, thereafter, monthly monitoring tests of the wind speed within the enclosure using the procedure specified in 8.7.4.2.1 and 8.7.4.2.2 of this regulation and a monthly visual inspection of the enclosure to determine if it is free of cracks, holes and other defects.

8.7.4.2.1 Determine the direction of the wind current in the enclosure by slowly rotating a velometer inside the entrance to the enclosure until the maximum speed is located.

8.7.4.2.2 Record the maximum wind speed.

8.7.5 Except as provided in 8.7.7 of this regulation, each owner or operator using a carbon adsorber to comply with 8.0 of this regulation shall measure and record the concentration of halogenated HAP solvents in the exhaust of the carbon adsorber daily. This test shall be conducted while the solvent cleaning machine is in the working mode and is venting to the carbon adsorber. The exhaust concentration shall be determined as specified in 8.7.5.1 and 8.7.5.2 of this regulation.

8.7.5.1 Measure the solvent concentration in the exhaust using one of the following analytical techniques:

8.7.5.1.1 A colorimetric detector tube designed to measure a concentration of 25 parts per million by volume of the halogenated HAP solvent in air to an accuracy of ±25% and used in accordance with the manufacturer's instructions.

8.7.5.1.2 A flame ionization analyzer used in accordance with Method 25A in Appendix A of 40 CFR Part 60.

8.7.5.1.3 A nondispersive infrared analyzer used in accordance with Method 25B in Appendix A of 40 CFR Part 60.

8.7.5.2 Provide a sampling port for monitoring within the exhaust outlet of the carbon adsorber that is easily accessible and located at least eight stack or duct diameters downstream from any flow disturbance such as a bend, expansion, contraction, or outlet; downstream from no other inlet; and two stack or duct diameters upstream from any flow disturbance such as a bend, expansion, contraction, inlet or outlet.

8.7.6 Each owner or operator of a batch vapor or in-line solvent cleaning machine complying with the idling emission limit standards of 8.4.2.1.2, 8.4.2.2.2, 8.4.3.1.2, or 8.4.3.2.2 of this regulation shall comply with the requirements specified in 8.7.6.1 and 8.7.6.2 of this regulation.

8.7.6.1 If using controls listed in 8.7.1 through 8.7.5 of this regulation, the owner or operator shall comply with the monitoring frequency requirements in 8.7.1 through 8.7.5 ~~of this regulation~~.

8.7.6.2 If using controls not listed in 8.7.1 through 8.7.5 of this regulation, the owner or operator shall establish the monitoring frequency for each control and submit it to the Administrator for approval in the initial test report.

8.7.7 Each owner or operator using a control device listed in 8.7.1 through 8.7.5 of this regulation can use alternative monitoring procedures approved by the Administrator.

8.8 Recordkeeping requirements.

8.8.1 Each owner or operator of a batch vapor or in-line solvent cleaning machine complying with the provisions of 8.4 of this regulation shall maintain records in written or electronic form specified in 8.8.1.1 through 8.8.1.7 of this regulation for the lifetime of the machine.

8.8.1.1 Owner's manuals, or if not available, written maintenance and operating procedures, for the solvent cleaning machine and control equipment.

8.8.1.2 The date of installation for the solvent cleaning machine and all of its control devices. If the exact date for installation is not known, a letter certifying that the cleaning machine and its control devices were installed prior to, or on, November 29, 1993, or after November 29, 1993, may be substituted.

8.8.1.3 If a dwell is used to comply with these standards, records of the tests required in 8.6.4 of this regulation to determine an appropriate dwell time for each part or parts basket.

8.8.1.4 Each owner or operator of a batch vapor or in-line solvent cleaning machine complying with the idling emission limit standards of 8.4.2.1.2, 8.4.2.2.2, 8.4.3.1.2, or 8.4.3.2.2 of this regulation shall maintain records of the initial performance test, including the idling emission rate and values of the monitoring parameters measured during the test.

8.8.1.5 Records of the halogenated HAP solvent content for each solvent used in a solvent cleaning machine subject to the provisions of 8.0 of this regulation.

8.8.1.6 If a squeegee system is used to comply with these standards, records of the test required in 8.7.6 of this regulation to determine the maximum product throughput for the squeegees and records of both the weekly monitoring required in 8.7.1.3 of this regulation for visual inspection and the length of continuous web product cleaned during the previous week.

8.8.1.7 If an air knife system or a combination squeegee and air knife system is used to comply with these standards, records of the determination of the proper operating parameter and parameter value for the air knife system.

8.8.2 Each owner or operator of a batch vapor or in-line solvent cleaning machine complying with 8.4 of this regulation shall maintain records specified in 8.8.2.1 through 8.8.2.4 of this regulation either in electronic or written form for a period of five years.

8.8.2.1 The results of control device monitoring required in 8.7 of this regulation.

8.8.2.2 Information on the actions taken to comply with 8.4.5 and 8.4.6 of this regulation. This information shall include records of written or verbal orders for replacement parts, a description of the repairs made, and additional monitoring conducted to demonstrate that monitored parameters have returned to accepted levels.

8.8.2.3 Estimates of annual solvent consumption for each solvent cleaning machine.

8.8.2.4 If a carbon adsorber is used to comply with these standards, records of the date and results of the daily measurement of the halogenated HAP solvent concentration in the carbon adsorber exhaust required in 8.7.5 of this regulation.

8.8.3 Except as provided in 8.8.5 of this regulation for continuous web cleaning machines, each owner or operator of a batch vapor or in-line solvent cleaning machine complying with the provisions of 8.5 of this regulation shall maintain records specified 8.8.3.1 through 8.8.3.3 of this regulation either in electronic or written form for a period of five years.

8.8.3.1 The dates and amounts of solvent that are added to the solvent cleaning machine.

8.8.3.2 The solvent composition of wastes removed from cleaning machines as determined using the procedure described in 8.6.3.2 of this regulation.

8.8.3.3 Calculation sheets showing how monthly emissions and the rolling three-month average emissions from the solvent cleaning machine were determined, and the results of all calculations.

8.8.4 Each owner or operator of a solvent cleaning machine without a solvent/air interface complying with the provisions of 8.5 of this regulation shall maintain records on the method used to determine the cleaning capacity of the cleaning machine.

8.8.5 Each owner or operator of a continuous web cleaning machine complying with the provisions of 8.5.4 of this regulation shall maintain the following records in either electronic or written form for a period of five years.

8.8.5.1 The dates and amounts of solvent that are added to the solvent cleaning machine.

8.8.5.2 The dates and amounts of solvent that are recovered from the desorption of the carbon adsorber system.

8.8.5.3 The solvent composition of wastes removed from each cleaning machine as determined using the procedures in 8.6.3.2 of this regulation.

8.8.5.4 Calculation sheets showing the calculation and results of determining the overall cleaning system control efficiency, as required in 8.6 of this regulation.

8.9 Reporting requirements.

8.9.1 Each owner or operator of an existing solvent cleaning machine subject to the provisions of 8.0 of this regulation shall submit an initial notification report to the Department no later than November 11, 2001. This report shall include the information specified in 8.9.1.1 through 8.9.1.6 of this regulation.

8.9.1.1 The name and address of the owner or operator.

8.9.1.2 The address (i.e., physical location) of the solvent cleaning machine or machines.

8.9.1.3 A brief description of each solvent cleaning machine including machine type (batch vapor, batch cold, vapor in-line or cold in-line), solvent/air interface area, and existing controls.

8.9.1.4 The date of installation for each solvent cleaning machine or a letter certifying that the solvent cleaning machine was installed prior to, or on, November 29, 1993.

8.9.1.5 The anticipated compliance approach for each solvent cleaning machine.

8.9.1.6 An estimate of annual halogenated HAP solvent consumption for each solvent cleaning machine.

8.9.2 Each owner or operator of a new solvent cleaning machine subject to the provisions of 8.0 of this regulation shall submit an initial notification report to the Department. New sources shall submit this report as soon as practicable before the construction or reconstruction is planned to commence or November 11, 2001, whichever is later. This report shall include all of the information required in 3.5.4.1 of this regulation, with the revisions and additions in 8.9.2.1 through 8.9.2.3 of this regulation.

8.9.2.1 The report shall include a brief description of each solvent cleaning machine including machine type (batch vapor, batch cold, vapor in-line or cold in-line), solvent/air interface area, and existing controls.

8.9.2.2 The report shall include the anticipated compliance approach for each solvent cleaning machine.

8.9.2.3 In lieu of 3.5.4.1.2.8 of this regulation, the owner or operator must report an estimate of annual halogenated HAP solvent consumption for each solvent cleaning machine.

8.9.3 Each owner or operator of a batch cold solvent cleaning machine subject to the provisions of 8.0 of this regulation shall submit a compliance report to the Department. For existing sources, this report shall be submitted to the Department no later than November 11, 2001. For new sources, this report shall be submitted to the Department no later than 150 days after startup or November 11, 2001, whichever is later. This report shall include the requirements specified in 8.9.3.1 through 8.9.3.4 of this regulation.

8.9.3.1 The name and address of the owner or operator.

8.9.3.2 The address (i.e., physical location) of the solvent cleaning machine or machines.

8.9.3.3 A statement, signed by the owner or operator of the solvent cleaning machine, stating that the solvent cleaning machine for which the report is being submitted is in compliance with the provisions of 8.0 of this regulation.

8.9.3.4 The compliance approach for each solvent cleaning machine.

8.9.4 Each owner or operator of a batch vapor or in-line solvent cleaning machine complying with the provisions of 8.4 of this regulation shall submit to the Department an initial statement of compliance for each solvent cleaning machine. For existing sources, this report shall be submitted to the Department no later than November 11, 2001. For new sources, this report shall be submitted to the Department no later than 150 days after startup or November 11, 2001, whichever is later. This statement shall include the requirements specified in 8.9.4.1 through 8.9.4.7 of this regulation.

8.9.4.1 The name and address of the owner or operator.

8.9.4.2 The address (i.e., physical location) of the solvent cleaning machine or machines.

8.9.4.3 A list of the control equipment used to achieve compliance for each solvent cleaning machine.

8.9.4.4 For each piece of control equipment required to be monitored, a list of the parameters that are monitored and the values of these parameters measured on or during the first month after the compliance date.

8.9.4.5 Conditions to maintain the wind speed requirements of 8.4.5.2.2 of this regulation, if applicable.

8.9.4.6 Each owner or operator of a solvent cleaning machine complying with the idling emission limit standards of 8.4.2.1.2, 8.4.2.2.2, 8.4.3.1.2, and 8.4.3.2.2 of this regulation shall submit a test report for tests of idling emissions meeting the specifications in Method 307 in Appendix A of 40 CFR Part 63. This report shall comply with the requirements specified in 8.9.4.6.1 through 8.9.4.6.4 of this regulation.

8.9.4.6.1 This test must be on the same specific model cleaner used at the source. The test can be done by the owner or operator of the affected machine or can be supplied by the vendor of that solvent cleaning machine or a third party.

8.9.4.6.2 This report must clearly state the monitoring parameters, monitoring frequency and the delineation of exceedances for each parameter.

8.9.4.6.3 If a solvent cleaning machine vendor or third party test report is used to demonstrate compliance, it shall include the following for the solvent cleaning machine tested: Name of person or persons or company that performed the test, model name, the date the solvent cleaning machine was tested, serial number, and a diagram of the solvent cleaning machine tested.

8.9.4.6.4 If a solvent cleaning machine vendor or third party test report is used, the owner or operator of the solvent cleaning machine shall comply with the requirements specified in 8.9.4.6.4.1 and 8.9.4.6.4.2 of this regulation.

8.9.4.6.4.1 Submit a statement by the solvent cleaning machine vendor that the solvent cleaning machine tested is the same as the solvent cleaning machine the report is being submitted for.

8.9.4.6.4.2 Demonstrate to the Department's satisfaction that the solvent emissions from the solvent cleaning machine for which the test report is being submitted are equal to or less than the solvent emissions from the solvent cleaning machine in the vendor test report.

8.9.4.7 If a carbon adsorber is used to comply with these standards, the date and results of the daily measurement of the halogenated HAP solvent concentration in the carbon adsorber exhaust required in 8.7.5 of this regulation.

8.9.5 Each owner or operator of a batch vapor or in-line solvent cleaning machine complying with the provisions of 8.5 of this regulation shall submit to the Department an initial statement of compliance for each solvent cleaning machine. For existing sources, this report shall be submitted to the Department no later than November 11, 2001. For new sources, this report shall be submitted to the Department no later than 150 days after startup or November 11, 2001, whichever is later. The statement shall include the information specified in 8.9.5.1 through 8.9.5.4 of this regulation.

8.9.5.1 The name and address of the owner or operator.

8.9.5.2 The address (i.e., physical location) of the solvent cleaning machine or machines.

8.9.5.3 The solvent/air interface area for each solvent cleaning machine or, for cleaning machines without a solvent/air interface, a description of the method used to determine the cleaning capacity and the results.

8.9.5.4 The results of the first three-month average emissions calculation.

8.9.6 Each owner or operator of a batch vapor or in-line solvent cleaning machine complying with the provisions of 8.4 of this regulation shall submit an annual report by February 1 of the year following the one for which the reporting is being made. This report shall include the requirements specified in 8.9.6.1 through 8.9.6.3 of this regulation.

8.9.6.1 A signed statement from the facility owner or his designee stating that, "All operators of solvent cleaning machines have received training on the proper operation of solvent cleaning machines and their control devices sufficient to pass the test required in 8.4.4.10 of this regulation."

8.9.6.2 An estimate of solvent consumption for each solvent cleaning machine during the reporting period.

8.9.6.3 The reports required in 8.9.6 and 8.9.7 of this regulation can be combined into a single report for each facility.

8.9.7 Each owner or operator of a batch vapor or in-line solvent cleaning machine complying with the provisions of 8.5 of this regulation shall submit a solvent emission report every year. This solvent emission report shall contain the requirements specified in 8.9.7.1 through 8.9.7.4 of this regulation.

8.9.7.1 The size and type of each solvent cleaning machine subject to 8.0 of this regulation (solvent/air interface area or cleaning capacity).

8.9.7.2 The average monthly solvent consumption for the solvent cleaning machine in kilograms per month.

8.9.7.3 The three-month monthly rolling average solvent emission estimates calculated each month using the method as described in 8.6.3 of this regulation.

8.9.7.4 The reports required in 8.9.6 and 8.9.7 of this regulation can be combined into a single report for each facility.

8.9.8 Each owner or operator of a batch vapor or in-line solvent cleaning machine shall submit an exceedance report to the Department semiannually except when, the Department determines on a case-by-case basis that more frequent reporting is necessary to accurately assess the compliance status of the source or, an exceedance occurs. Once an exceedance has occurred, the owner or operator shall follow a quarterly reporting format until a request to reduce reporting frequency under 8.9.9 of this regulation is approved. Exceedance reports shall be delivered or postmarked by the 30th day following the end of each calendar half

or quarter, as appropriate. The exceedance report shall include the applicable information in 8.9.8.1 through 8.9.8.3 of this regulation.

8.9.8.1 Information on the actions taken to comply with 8.4.5 and 8.4.6 of this regulation. This information shall include records of written or verbal orders for replacement parts, a description of the repairs made, and additional monitoring conducted to demonstrate that monitored parameters have returned to accepted levels.

8.9.8.2 If an exceedance has occurred, the reason for the exceedance and a description of the actions taken.

8.9.8.3 If no exceedances of a parameter have occurred, or a piece of equipment has not been inoperative, out of control, repaired, or adjusted, such information shall be stated in the report.

8.9.9 An owner or operator who is required to submit an exceedance report on a quarterly (or more frequent) basis may reduce the frequency of reporting to semiannual if the conditions in 8.9.9.1 through 8.9.9.3 of this regulation are met.

8.9.9.1 The source has demonstrated a full year of compliance without an exceedance.

8.9.9.2 The owner or operator continues to comply with all relevant recordkeeping and monitoring requirements specified in 8.7 and 8.8 of this regulation and in 3.0 of this regulation.

8.9.9.3 The Department does not object to a reduced frequency of reporting for the affected source as provided in 3.10.5.3.3 of this regulation.

8.9.10 [Reserved]

8.9.11 Each owner or operator of a solvent cleaning machine requesting an equivalency determination, as described in ~~8.10~~ 8.11 of this regulation shall submit an equivalency request report to the Administrator (with copy to the Department). For existing sources, this report must be submitted to and approved by the Administrator no later than November 11, 2001. For new sources, this report must be submitted to and approved by the Administrator prior to startup or November 11, 2001, whichever is later.

8.10 Additional facility-wide requirements applicable to affected facilities.

For purposes of 8.10 of this regulation, "each solvent cleaning machine" means each solvent cleaning machine that is part of an affected facility subject to the provisions of 8.10.

8.10.1 Each owner or operator of an affected facility shall comply with the requirements specified in 8.10 of this regulation.

8.10.2 Facility-wide emissions limits.

8.10.2.1 Each owner or operator of an affected facility **[~~must~~ shall]** maintain a log of solvent additions and deletions for each solvent cleaning machine.

8.10.2.2 Each owner or operator of an affected facility **[~~must~~ shall]** ensure that the total emissions of perchloroethylene, trichloroethylene and methylene chloride used at the affected facility are equal to or less than the applicable facility-wide 12-month rolling total halogenated HAP solvent emission limit presented in Table 8-7 of this regulation as determined using the procedures in 8.10.3.1 of this regulation.

TABLE 8-7 - Facility-wide 12-month rolling total halogenated HAP solvent emission limits for affected facilities with solvent cleaning machines		
Solvents emitted	Facility-wide 12-month rolling total emission limits for general population solvent cleaning machines (kilograms)	Facility-wide 12-month rolling total emission limit for solvent cleaning machines at military depot maintenance facilities (kilograms)
Perchloroethylene only	4,800	8,000
Trichloroethylene only	14,100	23,500
Methylene chloride only	60,000	100,000
Multiple solvents - Calculate the methylene chloride-weighted facility-wide 12-month rolling total halogenated HAP solvent emissions (WE) using equation 8-9	60,000	100,000

WE = (12.5 * PCE)+(4.25 * TCE)+(MC) (8-9)

where:

WE = Methylene chloride-weighted facility-wide 12-month rolling total halogenated HAP solvent emissions in kilograms.

PCE = Facility-wide 12-month rolling total perchloroethylene emissions from all solvent cleaning machines at the affected facility in kilograms.

TCE = Facility-wide 12-month rolling total trichloroethylene emission**[s]** from all solvent cleaning machines at the affected facility in kilograms.

MC = Facility-wide 12-month rolling total methylene chloride emissions from all solvent cleaning machines at the affected facility in kilograms.

8.10.3 Facility-wide monitoring requirements.

8.10.3.1 In addition to the monitoring requirements of 8.7 of this regulation, each owner or operator of an affected facility shall on the first operating day of every month demonstrate compliance with the applicable facility-wide 12-month rolling total halogenated HAP solvent emission limit using the procedures in 8.10.3.1.1 through 8.10.3.1.5 of this regulation.

8.10.3.1.1 Each owner or operator of an affected facility shall on the first operating day of **[~~month~~]** each **[month]** ensure that each solvent cleaning machine system contains only clean liquid solvent.

This includes, but is not limited to, fresh unused solvent, recycled solvent, and used solvent that has been cleaned of soiled materials. A fill line **[~~must~~ shall]** be indicated during the first month the measurements are made. The solvent level within the machine **[~~must~~ shall]** be returned to the same fill-line each month, immediately prior to calculating monthly emissions as specified in 8.10.3.1.2 and 8.10.3.1.3 of this regulation. The solvent cleaning machine does not have to be emptied and filled with fresh unused solvent prior to the calculations.

8.10.3.1.2 Using the records of all solvent additions and deletions for the previous month, each owner or operator of an affected facility shall on the first operating day of each month determine total halogenated HAP solvent emissions (Eunit) from each solvent cleaning machine using equation 8-10:

$$Eunit = SAi - LSRi - SSRi \qquad (8\text{-}10)$$

where:

Eunit= the total halogenated HAP solvent emissions from the solvent cleaning machine during the most recent month i, (kilograms per month).

SAi = the total amount of halogenated HAP liquid solvent added to the solvent cleaning machine during the most recent month i, (kilograms per month).

LSRi = the total amount of halogenated HAP liquid solvent removed from the solvent cleaning machine during the most recent month i, (kilograms per month).

SSRi = the total amount of halogenated HAP solvent removed from the solvent cleaning machine in solid waste, obtained as described in 8.10.3.1.3 of this regulation, during the most recent month i, (kilograms per month).

8.10.3.1.3 Each owner or operator of an affected facility shall on the first operating day of each month determine SSRi using the method specified in 8.10.3.1.3.1 or 8.10.3.1.3.2 of this regulation.

8.10.3.1.3.1 From tests conducted using Method 25d in Appendix A of 40 CFR Part 60.

8.10.3.1.3.2 By engineering calculations.

8.10.3.1.4 When 12 months of emissions data are available, each owner or operator of an affected facility shall on the first operating day of each month determine the 12-month rolling total halogenated HAP solvent emissions (ETunit) for the most recent 12 months using equation 8-11:

$$ETunit = \sum_{j=i}^{12} Eunit \qquad (8\text{-}11)$$

where:

ETunit = the 12-month rolling total halogenated HAP solvent emissions from the solvent cleaning machine for the most recent 12 months, (kilograms per 12-month period).

Eunit = the total halogenated HAP solvent emissions from the solvent cleaning machine for each month, j, for the most recent 12 months (kilograms per month).

8.10.3.1.5 When 12 months of emissions data are available, each owner or operator of an affected facility shall on the first operating day of each month determine the facility-wide 12-month rolling total halogenated HAP solvent emissions (ETfacility) for the most recent 12 months using equation 8-12:

$$ETfacility = \sum_{j=1}^{i} ETunit \qquad (8\text{-}12)$$

where:

ETfacility = the facility-wide 12-month rolling total halogenated HAP solvent emissions for the most recent 12 months from all solvent cleaning machines that are part of the affected facility, (kilograms per 12-month period).

ETunit = the 12-month rolling total halogenated HAP solvent emissions from the solvent cleaning machine for the most recent 12 months for each solvent cleaning machine, j, (kilograms per 12-month period).

i = the total number of solvent cleaning machines that are part of the affected facility subject to the provisions of 8.10 of this regulation.

8.10.3.2 If the facility-wide 12-month rolling total halogenated HAP solvent emissions for the most recent 12 months from all solvent cleaning machines that are part of the affected facility (ETfacility) as determined in 8.10.3.1.5 of this regulation exceeds the applicable facility-wide 12-month rolling total halogenated HAP solvent emission limit presented in Table 8-7 of this regulation, an exceedance has occurred. All exceedances shall be reported as required in 8.9.8 of this regulation.

8.10.4 Facility-wide recordkeeping requirements.

In addition to the recordkeeping requirements of 8.8 of this regulation, each owner or operator of an affected facility shall maintain records specified in 8.10.4.1 through 8.10.4.5 of this regulation in either electronic or written form for a period of five years.

8.10.4.1 The dates and amounts of solvent that are added to each solvent cleaning machine.

8.10.4.2 The dates and amounts of liquid solvent that are removed from each solvent cleaning machine.

8.10.4.3 The dates and amounts of solid waste that are removed from each solvent cleaning machine.

8.10.4.4 The solvent composition of solid wastes removed from each solvent cleaning machine as determined using the procedure described in 8.10.3.1.3 of this regulation.

8.10.4.5 The calculation sheets showing how monthly emissions and the 12-month rolling total halogenated HAP solvent emissions from each solvent cleaning machine were determined, and the results of all calculations.

8.10.5 Facility-wide notification requirements.

8.10.5.1 Each owner or operator of an affected facility shall submit an initial notification report to the Department. If the affected facility initially started up not later than May 3, 2010, the owner or operator of the affected facility shall submit this report not later than November 11, 2011. If the affected facility initially started up after May 3, 2010, the owner or operator of the affected facility shall submit this

report not later than November 11, 2011 or 120 calendar days after startup, whichever is later. This report shall include the information specified in 8.10.5.1.1 through 8.10.5.1.7 of this regulation.

8.10.5.1.1 The name and address of the owner or operator of the affected facility.

8.10.5.1.2 The name of the affected facility subject to the provisions of 8.10 of this regulation.

8.10.5.1.3 The address (*i.e.*, physical location) of the solvent cleaning machines that are part of an affected facility subject to the provisions of 8.10 of this regulation.

8.10.5.1.4 The address that the compliance records are kept, if different than the physical location.

8.10.5.1.5 A brief description of each solvent cleaning machine at the affected facility including machine type (batch vapor, batch cold, vapor in-line or cold in-line), halogenated HAP solvent used, solvent/air interface area, and existing controls.

8.10.5.1.6 The date of installation for each solvent cleaning machine.

8.10.5.1.7 An estimate of annual halogenated HAP solvent consumption for each solvent cleaning machine.

8.10.5.2 Each owner or operator of an affected facility shall submit an initial statement of compliance to the Department. If the affected facility initially started up on or before May 3, 2010, the owner or operator of the affected facility shall submit this statement not later than November 11, 2011. If the affected facility initially started up after May 3, 2010, the owner or operator of the affected facility shall submit this statement not later than November 11, 2011 or 13 months after startup, whichever is later. The statement shall include the information specified in 8.10.5.2.1 through **[~~8.10.5.2.5~~ 8.10.5.2.6]** of this regulation.

8.10.5.2.1 The name and address of the owner or operator of the affected facility.

8.10.5.2.2 The name of the affected facility subject to the provisions of 8.10 of this regulation.

8.10.5.2.3 The address (*i.e.*, physical location) of the solvent cleaning machines that are part of an affected facility subject to the provisions of 8.10 of this regulation.

8.10.5.2.4 The address that the compliance records are kept, if different than the physical location.

8.10.5.2.5 The results of the first facility-wide 12-month rolling total halogenated HAP solvent emissions calculation.

8.10.5.2.6 All engineering calculations pertaining to 8.10.3.1.3.2 of this regulation, if the owner or operator of the affected facility used engineering calculations to determine the total amount of halogenated HAP solvent removed in the solid waste in equation 8-10 of this regulation.

8.10.6 Facility-wide reporting requirements.

Each owner or operator of an affected facility shall submit a solvent emission report every year. The owner or operator shall submit the solvent emissions report by February 1 of the year following the one for which the reporting is being made. This solvent emission report shall include the information specified in 8.10.6.1 through 8.10.6.7 of this regulation.

8.10.6.1 The name and address of the owner or operator of the affected facility.

8.10.6.2 The name of the affected facility subject to the provisions of 8.10 of this regulation.

8.10.6.3 The address (*i.e.*, physical location) of the solvent cleaning machines that are part of an affected facility subject to the provisions of 8.10 of this regulation.

8.10.6.4 The address that the compliance records are kept, if different than the physical location.

8.10.6.5 The average monthly halogenated HAP solvent consumption for the affected facility in kilograms per month.

8.10.6.6 The facility-wide 12-month rolling total solvent emission estimates calculated each month using the method described in 8.10.3.1 of this regulation.

8.10.6.7 This report can be combined with the annual report required in 8.9.6 and 8.9.7 of this regulation into a single report for each facility.

~~8.10~~ 8.11 Equivalent methods of control.

Upon written application to the Administrator (with copy to the Department), the Administrator may approve the use of equipment or procedures after they have been satisfactorily demonstrated to be equivalent, in terms of reducing emissions of methylene chloride, perchloroethylene, trichloroethylene, 1,1,1-trichloroethane, carbon tetrachloride or chloroform to the atmosphere, to those prescribed for compliance within a specified provision of 8.0 of this regulation. The application must contain a complete description of the equipment or procedure and the proposed equivalency testing procedure and the date, time, and location scheduled for the equivalency demonstration.

~~8.11~~ 8.12 [Reserved]

Table ~~8-7~~ 8-8 - Applicability of 8.0 to 3.0 of this ~~This~~ Regulation

General Provisions Reference	Applies to 8.0		Comments
	BCC	BVI	
3.1.1.1 - 3.1.1.3	Yes	Yes	
3.1.1.4	Yes	Yes	Table ~~8-7~~ 8-8 specifies applicability of each provision in 3.0 to 8.0.
3.1.1.5	No	No	
3.1.1.6	Yes	Yes	
3.1.1.7 - 3.1.1.9	No	No	
3.1.1.10	Yes	Yes	
3.1.1.11	No	No	8.0 allows submittal of notifications and reports through the U.S. mail, fax, and courier. 8.0 requires that the postmark for notifications and reports submitted through the U.S. mail or other non-Governmental mail carriers be on or before deadline specified in an applicable requirement.

3.1.1.12 - 3.1.1.14	Yes	Yes	
3.1.2.1	No	No	8.0 specifies applicability.
3.1.2.2	No	No	
3.1.2.3	Yes	Yes	
3.1.3.1	Yes	Yes	
3.1.3.2	Yes	Yes	8.1.8 exempts area sources subject to 8.0 from the obligation to obtain a Title V operating permit.
3.1.3.3	No	No	
3.1.3.4	No	No	
3.1.3.5	Yes	Yes	8.0 does not require continuous monitoring systems (CMS) or continuous opacity monitoring systems (COMS). Therefore, notifications and requirements for CMS and COMS specified in 3.0 do not apply to 8.0.
3.1.4	No	No	
3.1.5	Yes	Yes	
3.2	Yes	Yes	8.0 definitions (8.2) for existing and new overlap with the definitions for existing source and new source in 3.2. Both 3.0 and 8.0 also define Administrator.
3.3.1 - 3.3.3	Yes	Yes	
3.4.1.1 - 3.4.1.2	Yes	Yes	
3.4.1.3 - 3.4.1.5	No	No	
3.4.2 - 3.4.3	Yes	Yes	
3.5.1.1	Yes	Yes	
3.5.1.2	Yes	Yes	
3.5.2.1	Yes	Yes	
3.5.2.2	No	No	
3.5.2.3 - 3.5.2.4	Yes	Yes	
3.5.2.5	No	No	
3.5.2.6	Yes	Yes	
~~6.5.3~~ 3.5.3	No	No	
3.5.4 - 3.5.4.1.2.6	Yes	Yes	
3.5.4.1.2.7	No	No	

3.5.4.1.2.8	Yes	Yes	
3.5.4.1.2.9	No	No	
3.5.4.1.2.10 - 3.5.6	Yes	Yes	
3.6.1	Yes	Yes	
3.6.2.1 - 3.6.2.5	Yes	Yes	8.1 specifies compliance dates.
3.6.2.6	No	No	
3.6.2.7	No	No	8.0 has the same requirements for affected halogenated HAP solvent cleaning machine subcategories that are located at area sources as it does for those located at major sources
3.6.3.1 - 3.6.3.2	Yes	Yes	
3.6.3.3 - 3.6.3.4	No	No	
3.6.3.5	Yes	Yes	8.0 has the same requirements for affected halogenated HAP solvent cleaning machine subcategories that are located at area sources as it does for those located at major sources.
3.6.4	No	No	
3.6.5.1	Yes	Yes	
3.6.5.2	No	No	
3.6.5.3	No	No	8.0 overrides the requirement of a startup, shutdown, and malfunction plan. 8.0 specifies startup and shutdown procedures to be followed by an owner or operator for batch vapor and in-line cleaning machines.
3.6.6 - 3.6.7	Yes	Yes	
3.6.8	No	No	8.0 does not require compliance with an opacity or visible emission standard.
3.6.9.1 - 3.6.9.14 ~~4.6.9.14~~	Yes	Yes	
3.6.9.15	No	No	
3.6.9.16	Yes	Yes	
3.6.10	Yes	Yes	
3.7.1 - 3.7.1.2	No	Yes	8.0 gives owners or operators the option to perform an idling emission performance test as a way of demonstrating compliance. Other options are also available that do not require a performance test.
3.7.1.2.1 - 3.7.1.2.8	No	No	

3.7.1.2.9 - 3.7.1.3	No	Yes	
3.7.2	No	Yes	This is only required for those owners or operators that choose the idling emission standard as their compliance option.
3.7.3.1	No	Yes	This is only required for those owners or operators that choose the idling emission standard as their compliance option.
3.7.3.2 - 3.7.3.3	No	No	8.0 does not require a site-specific test plan for the idling emission performance test.
3.7.3.4	No	No	8.0 does not require a performance test that involves the retrieval of gas samples, and therefore this does not apply.
3.7.4	No	No	Requirements do not apply to the idling emission performance test option.
3.7.5	No	Yes	
3.7.6	No	Yes	
3.7.7 - 3.7.7.1	No	Yes	8.0 specifies what is required to demonstrate idling emission standard compliance through the use of Method 307 in Appendix A of 40 CFR Part 63 and control device monitoring. Reports and records of testing and monitoring are required for compliance verification. Three runs of the test are required for compliance, as specified in 3.7.5
3.7.7.2	No	No	
3.7.7.3	No	Yes	
3.7.8	No	No	8.0 does not require the use of a performance test to comply with the standard. The idling emission standard option (which requires an idling emission performance test) is an alternative option offered to owners or operators of batch vapor and in-line cleaning machines for compliance flexibility.
3.8.1.1 - 3.8.1.2	Yes	Yes	
3.8.1.3	No	No	
3.8.1.4 - 3.8.2	Yes	Yes	
3.8.3 - 3.8.5	No	No	8.0 does not require the use of continuous monitoring systems to demonstrate compliance.
3.8.6	Yes	Yes	
3.8.7	No	No	8.0 does not require continuous opacity monitoring systems and continuous monitoring systems data.

3.9.1.1 - 3.9.1.4	Yes	Yes	
3.9.2.1	Yes	Yes	
3.9.2.2	Yes	Yes	~~8.0~~ 8.9 includes all of those requirements stated in 3.0, except that 3.0 also requires a statement as to whether the affected source is a major or an area source, and an identification of the relevant standard (including the source's compliance date). ~~8.0~~ 8.9.1 and 8.9.2 also ~~has some~~ includes more specific information requirements specific to the affected source (see 8.9.1 and 8.9.2). 8.10.5.1 includes all initial notification requirements for affected facilities subject to a facility-wide 12-month rolling total halogenated HAP solvent emission limit.
3.9.2.3	No	No	
3.9.2.4 - 3.9.2.4.1	Yes	Yes	
3.9.2.4.2 - 3.9.2.4.4	No	No	
3.9.2.4.5	Yes	Yes	
3.9.2.5	Yes	Yes	
3.9.3	Yes	Yes	
3.9.4	Yes	Yes	
3.9.5	Yes	Yes	Under 8.0, this requirement only applies to owners or operators choosing to comply with the idling emissions standard.
3.9.6	No	No	8.0 does not require opacity or visible emission observations.
3.9.7	No	No	8.0 does not require the use of continuous monitoring systems or continuous opacity monitoring systems.
3.9.8	No	No	8.9.3 through 8.9.5 ~~requires an~~ include all initial statement of compliance requirements for affected sources. ~~for~~ For existing sources, this statement is to be submitted to the Department no later than November 11, 2001. For new sources, this ~~report~~ statement is to be submitted to the Department no later than 150 days after startup or November 11, 2001, whichever is later. 8.10.5.2 includes all initial statement of compliance requirements for affected facilities subject to a facility-wide 12-month rolling total halogenated HAP solvent emission limit.

3.9.9	Yes	Yes	
3.9.10	Yes	Yes	
3.10.1	Yes	Yes	
3.10.2.1 - 3.10.2.2	No	No	Recordkeeping requirements are specified in 8.0.
3.10.2.3	Yes	Yes	
3.10.3.1 - 3.10.3.15	No	No	8.0 does not require continuous monitoring systems.
3.10.4.1	Yes	Yes	
3.10.4.2 - 3.10.4.5	No	No	Reporting requirements are specified in 8.0.
3.10.5.1 - 3.10.5.2	No	No	8.0 does not require continuous emissions monitoring systems.
3.10.5.3	No	No	8.0 does not require continuous monitoring systems.
3.10.5.4	No	No	8.0 does not require continuous opacity monitoring systems.
3.10.6	Yes	Yes	
3.11.1	Yes	Yes	
3.11.2	No	No	Flares are not a control option under 8.0
3.12.1 - 3.12.3	Yes	Yes	
3.13.1 - 3.13.3	Yes	Yes	
3.14	No	No	8.0 requirements do not require the use of the test methods incorporated by reference in 3.0.
3.15.1 - 3.15.2	Yes	Yes	

BCC = Batch Cold Cleaning Machines.
BVI = Batch Vapor and In-line Cleaning Machines.

11 DE Reg. 221 (08/01/07)

Appendix A to 8.0 of <u>this</u> ~~This~~ Regulation
Test of Solvent Cleaning Procedures

GENERAL QUESTIONS

1. What is the maximum allowable speed for parts entry and removal?
   A. 8.5 meters per minute (28 feet per minute)

B. 3.4 meters per minute (11 feet per minute)

C. 11 meters per minute (36 feet per minute)

D. No limit

2. How do you ensure that parts enter and exit the solvent cleaning machine at the speed required in the regulation?

A. Program on computerized hoist monitors speed

B. Can judge the speed by looking at it

C. Measure the time it takes the parts to travel a measured distance

3. Identify the sources of air disturbances.

A. Fans

B. Open doors

C. Open windows

D. Ventilation vents

E. All of the above

4. What are the three operating modes?

A. Idling, working and downtime

B. Precleaning, cleaning, and drying

C. Startup, shutdown, off

D. None of the above

5. When can parts or parts baskets be removed from the solvent cleaning machine?

A. When they are clean

B. At any time

C. When dripping stops

D. Either A or C is correct

6. How must parts be oriented during cleaning?

A. It does not matter as long as they fit in the parts basket

B. So that the solvent pools in the cavities where the dirt is concentrated

C. So that solvent drains from them freely

7. During startup, what must be turned on first, the primary condenser or the sump heater?

A. Primary condenser

B. Sump heater

C. Turn both on at same time

D. Either A or B is correct

8. During shutdown, what must be turned off first, the primary condenser or the sump heater?
   A. Primary condenser
   B. Sump heater
   C. Turn both off at same time
   D. Either A or B is correct

9. In what manner must solvent be added to and removed from the solvent cleaning machine?
   A. With leak proof couplings
   B. With the discharge end of the pipe below the liquid solvent surface
   C. So long as the solvent does not spill, the method does not matter
   D. A and B

10. What must be done with waste solvent and still and sump bottoms?
   A. Pour down the drain
   B. Store in closed container
   C. Store in a bucket
   D. A or B

11. What types of materials are prohibited from being cleaned in solvent cleaning machines using halogenated ~~hazardous air pollutant~~ HAP solvents?
   A. Sponges
   B. Fabrics
   C. Paper
   D. All of the above

CONTROL DEVICE SPECIFIC QUESTIONS

Freeboard Refrigeration Device (FRD)

1. What temperature must the FRD achieve?
   A. Below room temperature
   B. 50 °F
   C. Below the solvent boiling point
   D. 30% below the solvent boiling point

Working-Mode Cover

2. When can a cover be open?
   A. While parts are in the cleaning machine
   B. During parts entry and removal
   C. During maintenance
   D. During measurements for compliance purposes

E. A and C
F. B, C, and D

3. Covers must be maintained in what condition?
   A. Free of holes
   B. Free of cracks
   C. So that they completely seal cleaner opening
   D. All of the above

Dwell

4. Where must the parts be held for the appropriate dwell time?
   A. In the vapor zone
   B. In the freeboard area above the vapor zone
   C. Above the cleaning machine
   D. In the immersion sump

ANSWERS

General Questions

1. B
2. A or C
3. E
4. A
5. C
6. C
7. A
8. B
9. D
10. B
11. D

Control Device Specific Questions

1. D
2. F
3. D
4. B

http://www.epa.gov/ttn/atw/hlthef/tri-ethy.html

Trichloroethylene

79-01-6

Hazard Summary-Created in April 1992; Revised in January 2000

Most of the trichloroethylene used in the United States is released into the atmosphere from industrial degreasing operations. Acute (short-term) and chronic (long-term) inhalation exposure to trichloroethylene can affect the human central nervous system (CNS), with symptoms such as dizziness, headaches, confusion, euphoria, facial numbness, and weakness. Liver, kidney, immunological, endocrine, and developmental effects have also been reported in humans. A recent analysis of available epidemiological studies reports trichloroethylene exposure to be associated with several types of cancers in humans, especially kidney, liver, cervix, and lymphatic system. Animal studies have reported increases in lung, liver, kidney, and testicular tumors and lymphoma. The Agency is currently reassessing the cancer classification of trichloroethylene.

Please Note: The main source of information for this fact sheet is the Agency for Toxic Substances and Disease Registry's (ATSDR's) *Toxicological Profile for Trichloroethylene*. Another secondary source used is EPA's *Health Assessment Document for Trichloroethylene*.

Uses

- The main use of trichloroethylene is in the vapor degreasing of metal parts. (1)
- Trichloroethylene is also used as an extraction solvent for greases, oils, fats, waxes, and tars, a chemical intermediate in the production of other chemicals, and as a refrigerant. (1)
- Trichloroethylene is used in consumer products such as typewriter correction fluids, paint removers/strippers, adhesives, spot removers, and rug-cleaning fluids. (1)
- Trichloroethylene was used in the past as a general anesthetic. (1)

Sources and Potential Exposure

- Trichloroethylene has been detected in ambient air at levels less than 1 part per billion (ppb). Ambient air measurement data from the Aerometric Information Retrieval System (which has 1,200 measurements from 25 states from 1985-1995) give a range of ambient air values from 0.01 to 3.9 micrograms per cubic meter ($\mu g/m^3$). (1,13)
- Because of its moderate water solubility, trichloroethylene in soil has the potential to migrate into groundwater. The relatively frequent detection of trichloroethylene in groundwater confirms its mobility in soils. (13)
- Drinking water supplies relying on contaminated groundwater sources may contain trichloroethylene. ATSDR reports that trichloroethylene is the most frequently reported organic contaminant in groundwater. It estimates between 9 and 34 percent of drinking water supply sources have some trichloroethylene contamination but that most municipal water supplies are in compliance with the maximum contaminant level of 5 µg/L. (1,13)
- Workers may be exposed to trichloroethylene in the factories where it is manufactured or used. In addition, persons breathing air around these factories may be exposed to trichloroethylene. (1)
- Persons may also be exposed to trichloroethylene through the use of products containing the chemical and from evaporation and leaching from waste disposal sites. (1)

Assessing Personal Exposure

- Trichloroethylene can be measured in the breath, and breakdown products of trichloroethylene can be measured in urine or blood. (1)

Health Hazard Information

Acute Effects:

- Central nervous system effects are the primary effects noted from acute inhalation exposure to trichloroethylene in humans, with symptoms including sleepiness, fatigue, headache, confusion, and feelings of euphoria. Effects on the liver, kidneys, gastrointestinal system, and skin have also been noted. (1)
- Neurological, lung, kidney, and heart effects have been reported in animals acutely exposed to trichloroethylene. (1)
- Tests involving acute exposure of rats and mice have shown trichloroethylene to have low toxicity from inhalation exposure and moderate toxicity from oral exposure. (1,2)

Chronic Effects (Noncancer):

- As with acute exposure, chronic exposure to trichloroethylene by inhalation also affects the human central nervous system. Case reports of intermediate and chronic occupational exposures included effects such as dizziness, headache, sleepiness, nausea, confusion, blurred vision, facial numbness, and weakness. (1)
- Effects to the liver, kidneys, and immune and endocrine systems have also been seen in humans exposed to trichloroethylene occupationally or from contaminanted drinking water. (13)
- Studies have shown that simultaneous alcohol consumption and trichloroethylene inhalation increases the toxicity of trichloroethylene in humans. (1)
- Neurological, liver, and kidney effects were reported in chronically-exposed animals. (1)
- EPA is in the process of calculating a Reference Concentration (RfC) and Reference Dose (RfD) for trichloroethylene.
- ATSDR has calculated an intermediate-duration inhalation minimal risk level (MRL) of 0.1 parts per million (ppm) (0.5 milligrams per cubic meter, mg/m^3) for trichloroethylene based on neurological effects in rats. The MRL is an estimate of the daily human exposure to a hazardous substance that is likely to be without appreciable risk of adverse noncancer health effects over a specified duration of exposure. Exposure to a level above the MRL does not mean that adverse health effects will occur. The MRL is intended to serve as a screening tool. (1)
- The California Environmental Protection Agency (CalEPA) has calculated a chronic inhalation reference exposure level of 0.6 mg/m^3 based on neurological effects in humans. The CalEPA reference exposure level is a concentration at or below which adverse health effects are not likely to occur. (5)

Reproductive/Developmental Effects:

- A study of nurses occupationally exposed by inhalation to trichloroethylene along with other chemicals in operating rooms, and another epidemiological study of women exposed occupationally or nonoccupationally to trichloroethylene and other solvents, have reported increases in the incidence of miscarriages. The presence of other chemicals, however, limits the ability to draw conclusions specific to trichloroethylene. (1)
- An epidemiological study of 2,000 male and female workers exposed to trichloroethylene via inhalation found no increase in malformations in babies born following exposure. (1)
- Several studies have evaluated and not found an association between adverse reproductive effects in humans and exposure to trichloroethylene in contaminated drinking water. An association was found between the occurrence of congenital heart disease in children and a drinking water supply contaminated with trichloroethylene and other similar chemicals; however, no causal relationship with trichloroethylene could be concluded. (1)
- Animal studies have reported developmental effects from exposure to trichloroethylene and its metabolites (trichloroacetic acid [TCA] and dichloroacetic acid [DCA]). (1,4,13)

Cancer Risk:

- The cancer epidemiology for trichloroethylene has grown in recent years with several large, well-designed studies being published. A recent analysis of available epidemiological studies reports trichloroethylene exposure to be associated with several types of cancers in humans, especially kidney, liver, cervix, and lymphatic system. Consistency across epidemiological studies is strongest for an association between trichloroethylene exposure and kidney cancer. These results are supported by recent molecular epidemiology studies showing specific renal cell mutations found primarily in renal cell carcinoma patients exposed to trichloroethylene. (13)

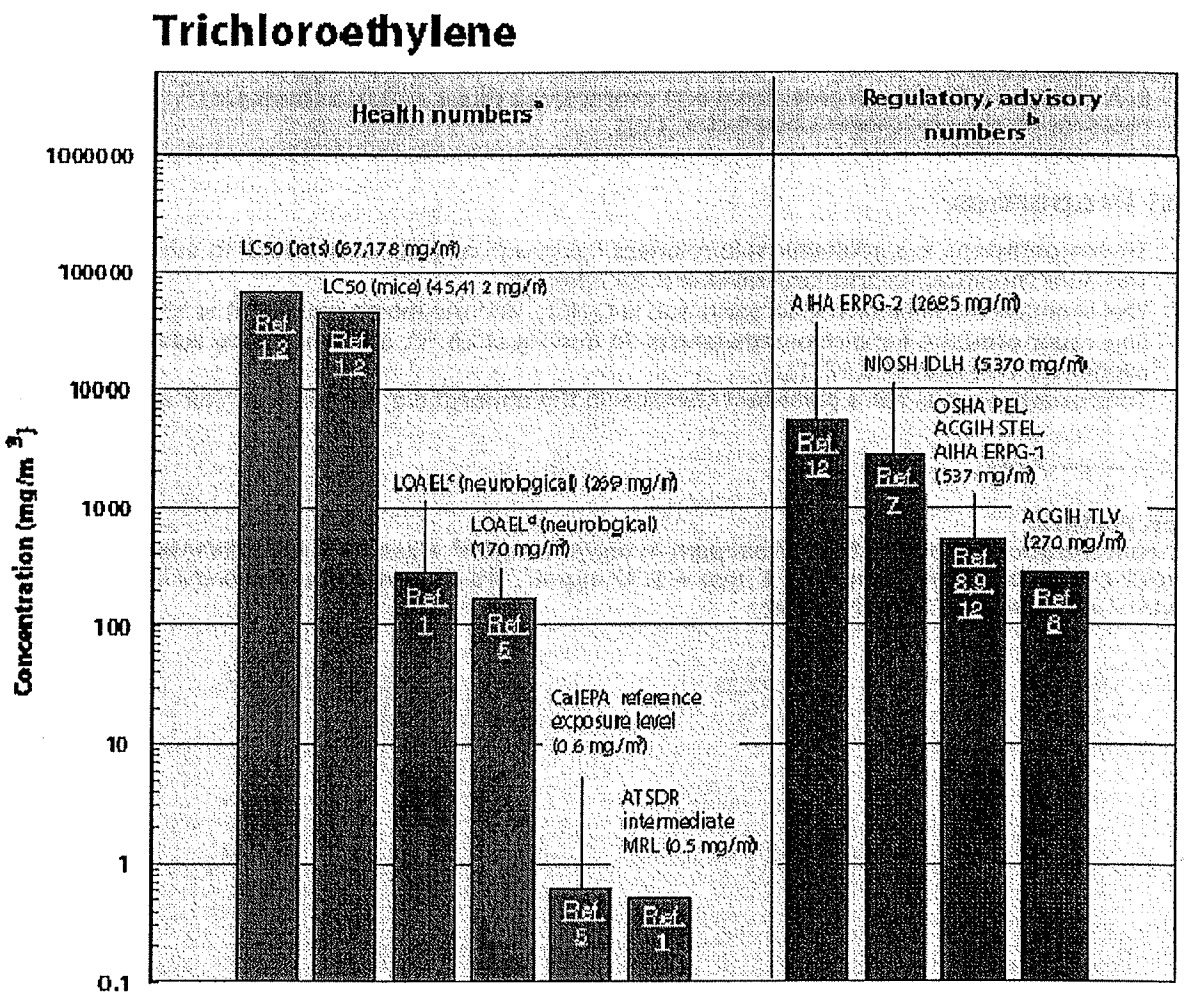
- Animal studies have reported increases in lung, liver, kidney, and testicular tumors and lymphoma from inhalation and oral exposures in rats and mice. (1,4,13)
- EPA does not currently have a consensus classification for the carcinogenicity of trichloroethylene. However, the Agency is currently reassessing its potential carcinogenicity, and new data suggest that trichloroethylene is a likely human carcinogen. (11,13)
- EPA uses mathematical models, based on animal studies, to estimate the probability of a person developing cancer from continuously breathing air containing a specified concentration of a chemical. EPA has calculated a provisional inhalation unit risk estimate of 1.7 x 10-6 $(\mu g/m^3)^{-1}$. A provisional value is one which has not received Agency-wide review. EPA is currently reassessing the inhalation unit risk estimate. (10)
- EPA has also calculated a provisional oral cancer slope factor of 0.011 $(mg/kg/d)^{-1}$. EPA is currently reassessing the oral cancer slope factor. (10)

Physical Properties

- Trichloroethylene is a nonflammable colorless liquid with a sweet odor similar to ether or chloroform. (1)
- The odor threshold for trichloroethylene is 28 ppm. (6)
- The chemical formula for trichloroethylene is C_2HCl_3, and the molecular weight is 131.40 g/mol. (1)
- The vapor pressure for trichloroethylene is 74 mm Hg at 25 °C, and it has a log octanol/water partition coefficient (log K_{ow}) of 2.42. (1)
- Trichloroethylene is not a persistent chemical in the atmosphere; its half-life in air is about 7 days. (1)

Conversion Factors:
To convert concentrations in air (at 25°C) from ppm to mg/m^3: mg/m^3 = (ppm) × (molecular weight of the compound)/(24.45). For trichloroethylene: 1 ppm = 5.37 mg/m^3. To convert concentrations in air from $\mu g/m^3$ to mg/m^3: mg/m^3 = ($\mu g/m^3$) x (1 mg/1,000 µg).

Health Data from Inhalation Exposure



ACGIH STEL--American Conference of Governmental and Industrial Hygienists' short-term exposure limit; 15-min time-weighted-average exposure that should not be exceeded at any time during a workday even if the 8-h time-weighted-average is within the threshold limit value.

ACGIH TLV--ACGIH's threshold limit value expressed as a time-weighted average; the concentration of a substance to which most workers can be exposed without adverse effects.

AIHA ERPG--American Industrial Hygiene Association's emergency response planning guidelines. ERPG 1 is the maximum airborne concentration below which it is believed nearly all individuals could be exposed up to one hour without experiencing other than mild transient adverse health effects or perceiving a clearly defined objectionable odor; ERPG 2 is the maximum airborne concentration below which it is believed nearly all individuals could be exposed up to one hour without experiencing or developing irreversible or other serious health effects that could impair their abilities to take protective action.

LC_{50} (Lethal Concentration$_{50}$)--A calculated concentration of a chemical in air to which exposure for a specific length of time is expected to cause death in 50% of a defined experimental animal population.

NIOSH IDLH--National Institute of Occupational Safety and Health's immediately dangerous to life or health concentration; NIOSH recommended exposure limit to ensure that a worker can escape from an exposure condition that is likely to cause death or immediate or delayed permanent adverse health effects or prevent escape from the environment.

OSHA PEL--Occupational Safety and Health Administration's permissible exposure limit expressed as a time-weighted average; the concentration of a substance to which most workers can be exposed without adverse effect averaged over a normal 8-h workday or a 40-h workweek.

The health and regulatory values cited in this factsheet were obtained in December 1999.

[a]Health numbers are toxicological numbers from animal testing or risk assessment values developed by EPA.

[b]Regulatory numbers are values that have been incorporated in Government regulations, while advisory numbers are nonregulatory values provided by the Government or other groups as advice. OSHA numbers are regulatory, whereas NIOSH, ACGIH, and AIHA numbers are advisory.

[c]The LOAEL is from the critical study used as the basis for the ATSDR intermediate MRL.

[d]The LOAEL is from the critical study used as the basis for the CalEPA chronic reference exposure level.

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